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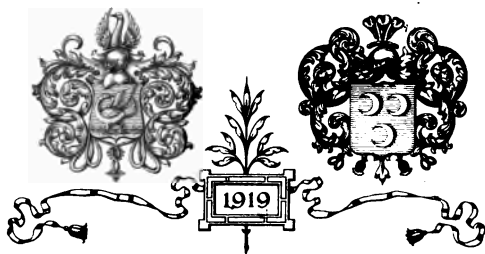
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GREAT OUTLINE

OF

GEOGRAPHY

1

FOR HIGH SCHOOLS AND FAMILIES.

Text-Book to Accompany the

UNIVERSAL ATLAS.

BY
THEODORE S. FAY.

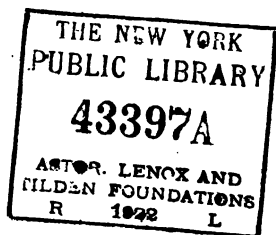
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"Worship him that made heaven, and earth, and the sea, and the fountains
of waters."—Rev. xiv. 7.

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PREFACE.

WE have numerous excellent School Geographies. Why another? A few lessons, given or received, with the present work, will be a sufficient answer. It is because a large and simple enough circle of geographical knowledge is not generally taught. What countries does the traveler pass through, from Hammerfest to Hobarton—from London to the most populous city of the globe, Han-kow; or from the Baltic to the Adriatic? Why is the arctic circle, or tropic of Cancer, drawn just where it is? Explain the phenomena of the seasons; the condition of day and night, climate, etc., at the different points of the globe's surface. Why has one point of the earth, six months uninterrupted day or night, and another, never more than 12 hours? Why is the winter colder, and the summer hotter, in the S. Hem., than in the northern? Ask these, and similar questions, of young students, who have completed their geographical course; and

we shall often perceive that there is room for another geographical School-Book — that there is *need* of another, wider reaching, and which does its work more thoroughly. Consider, moreover, that the science of Geography itself has recently made striking advances—from geographical discoveries—from the concentration of knowledge in geographical societies—from the perfection to which map-drawing has been brought; and, also, that new political events, in many parts of the globe, have changed territorial limits.

Our country has just passed through a great crisis. It is, at last, seated upon the foundations of Law, Liberty, and Christianity. It has taken a higher place among the nations, and is beginning to exercise weightier influence in the councils of mankind. The uttermost corners of the earth are being explored. Remote, until now unknown, civilizations are being opened; and steam and electricity are bringing them more within our observation, and in nearer relations with us. The entire Eastern Continent is threatened with immense changes. It is necessary that the American people should follow them with intelligent attention; and the rising generation, particularly, require a clearer knowledge, not only of their own, but other countries. They must know the divisions of the whole earth, as they know the States of the Union or the rooms of their houses. Yet more. They must become better acquainted with the planet they inhabit, and with its immense and various populations—fellow-tenants of their wonderful abode. To give this

instruction *completely*, in a little volume, like the present, is impossible. A part, only, can be first given. What part? That is the question. We have attempted to discover and separate this part. We present a School Geography, upon an entirely new principle—a Great Outline, intended equally for the use of persons who have never studied Geography (these will find it a foundation), and for persons who have completed their studies (these will find it a résumé). It includes the main points—the essential points of the science—that part which all persons will find it most advantageous, as well as most easy, to fix in their minds, and to carry with them through life. If you do not know this Outline, you can have no real knowledge of Geography. If you know it—all other geographical knowledge, which your circumstances may require, will come to you far more easily, indeed almost naturally.

How to frame this Outline? What to select and reject? How to introduce it when framed, into the mind? How to engrave it there permanently? How to give it a power of self-development, so that it will remain in the mind—not a mass of dead facts unconnected with each other—but a living seed, to bring forth fruit in its season? This is the task undertaken by the writer. The friends of education, the teacher, the student, are respectfully invited to examine, whether or not it is accomplished. It has been said: there is “no royal road to Mathematics.” The author cannot wholly repress the hope that he has cut a shorter and pleasanter pathway to Geography.

Among the advantages of this method the following may be stated:

1. The teacher reads all lessons from the book. The pupil follows every word upon the plates. He thus studies, at the same time, with his ear and eye. The effect will soon become apparent.

2. No formal demand is made on his memory; yet he cannot help learning by heart, understanding, and retaining what he has learned; because the book itself teaches him how it must be studied.

3. By an arrangement equally simple and useful, the confusion of crowded names on the maps is avoided.

4. The text is constructed so that the more advanced pupils may easily become competent teachers of other classes.

5. The work will be equally useful to mothers, governesses, elder sisters, and brothers, who, even when not prepared by previous study, will find no difficulty, by its aid, in taking the younger members of the family through the whole course.

6. No study at home is necessary. The recitation is study enough. Thus the trouble of carrying books backward and forward is avoided.

7. The text is broken apart into 500 or 600 sections, each one carefully arranged after, or rather above the other, so that the ascent is as easy as the steps of a flight of stairs.

8. If any thing is left out which other School-Geographies give, it is done intentionally, to supply the place with more important matter, which others

omit. Such remarks, therefore, as "*this river*," "*that town*," etc., are not given, will, we think, be withdrawn, upon a better understanding of the plan. A man, passing around the globe, does not carry every thing in his knapsack.

A correct opinion of the work cannot be formed by turning over the leaves. It is not a book of reference or reading. It is a *teaching*—a *studying* book. The text without the plates, or the plates without the text, might be deemed imperfect and unintelligible. They are parts of a machine; and must be used together, like the blades of a pair of scissors.

While Parts I. II. and III. give a uniform bird's-eye view of the entire globe's surface—not by disjointed maps, on different scales, but by planispheres, presenting *whole views* of the earth—Parts IV. and V. present outline views of Europe and the United States of America, on a larger scale, applying to them the same principles which have been previously applied to the entire globe. The writer has not attempted to teach the whole science. Some may object that he has not taught enough. The answer is: *learn this first; then it will be time to ask for more*. Such as are prepared for more, are referred to Text-book, sections 6 and 98.

Lastly, the work is not intended to reflect upon, far less to displace, any other good School-Geography. We have several which execute, with conscientiousness and success, the task they have undertaken. But that task differs from ours in this. We have blended, into their natural union, astronomical and

physical Geography. We have boldly rejected all the usual mass of details, irreconcilable with the simplicity and symmetry of a great, uniform *outline*—an outline comprehending the entire Earth, and which cannot be properly got into the mind unless it be taken, *apart* from those details. It is hoped, therefore, that the “Great Outline” will be regarded by other School Geographies in the field—not as an enemy, but as a re-enforcement.

TEXT-BOOK OF GEOGRAPHY.

INTRODUCTION.

(1.) **Geography** is a description of the surface of the earth as the residence of man. It is generally divided into Ancient and Modern Geography; the first embraces the period of man's residence on the earth, from the beginning of human history till the fall of the Roman Empire; the latter extends from the fall of the Roman Empire to our day. Geography is subdivided into four departments—Astronomical or Mathematical, Physical, Political, and Historical.

(2.) **Astronomical Geography** describes the earth as one of the heavenly bodies — its form, magnitude and place in our solar system—its motions and relations to other celestial bodies, *particularly to the sun*—the way in which it holds itself as it moves around that central orb, etc. It explains seasons—climates—lines drawn on maps and artificial globes, such as *arctic and antarctic circles, tropics of Capricorn and Cancer, equator, ecliptic*, etc. By it we ascertain the true position of places on the earth's surface.

(3.) **Physical Geography** — sometimes termed *Natural Geography*—describes the most striking natural features of the earth's surface—the configuration of the land—the phenomena of the ocean—currents—

winds, etc.—the soil—modifications of climates and their physical causes. It also gives a general idea of great land and water divisions—continents—oceans—lakes— islands—peninsulas—capes—mountain-chains—mountain-peaks—rivers—plains—valleys, etc.

(4.) **Ordinary, Political or Descriptive Geography** describes the divisions of the earth's surface into countries—empires—republics—kingdoms—states—towns, etc.; and gives some account of their inhabitants—governments—religions—languages—civilisation—natural productions—manufactures—commerce, etc.

(5.) **Historical Geography** treats of the origin of countries—of what, for the sake of convenience, we call the different races and families of man—the great events, changes and revolutions through which they have passed—the enterprises and expeditions, by which man has gradually explored remote continents, islands and oceans; thus obtaining an exact knowledge of the real shape and dimensions of our planet and a tolerable acquaintance with nearly every part of its surface.

(6.) **Purpose of this work.**—It is obvious that no mere school-book can give a *complete* knowledge of these vast subjects. All that we can conscientiously promise to teach the young student, is an outline, to be more or less filled up, according to the opportunities and requirements of future life. We have endeavored, with great expense, labor and care, aided by the best authorities and most distinguished collaborators, to give, within the smallest possible compass, and, consequently, by the premeditated sacrifice of many details, such a *perfectly selected and arranged outline* of geographical knowledge as is most necessary, not only for the student of every school, but for all persons in every class of life. And, as it is much more desirable to learn an elementary, definite part

of a science *thoroughly*, than to obtain a larger amount of general knowledge *superficially*, we have limited our treatment of Astronomical, Physical and Political Geography to a *resumé*, constructed so as to—(we venture here to use this word) *force itself* into every mind; and to form a solid and permanent *foundation*. Whatever may be reasonably desired to complete the circle of Ordinary, Political or Descriptive Geography, will be subsequently supplied by a second Text-book, nearly ready for publication, containing articles on countries, prominent rivers, mountains, etc. The second Text-book is not necessarily to be taken as a part of this work. The student, after having mastered the latter, will be thoroughly prepared, unaided by any teacher, to pursue the study of Geography *merely by reading*, with attention, any good Treatises within his reach. The purpose of the second Text-book, is to furnish such a Treatise, framed to suit the knowledge thus acquired, corresponding with the Atlas in his possession, and presenting a clearer panoramic view of the nations now occupying the globe—their degree of christian civilization—the very striking peculiarities of their present position and condition, etc.—than he can obtain from any other volume of the same compass.

PART I.

ASTRONOMICAL GEOGRAPHY.

(7.) **Starry heavens.** — On a cloudless evening, the heavens appear scattered with stars set like gems in the interior of a vast concave. Our eye is not conscious of their unequal distances. Some seem larger than others and sparkle with far more brilliancy.

(8.) **Number of stars.** — A person in the latitude of the United States can count, with the naked eye, 2 or 3,000. On the equator, where, in 24 hours, the spectator can get a view of the whole heavens without changing his place, he could distinguish about 5,000. The telescope discloses hundreds and thousands of millions — in fact, a number without limit.

(9.) **Fixed Stars.** — With the exception of the planets, of which 6 are visible, all the stars are called *Fixed Stars*. They are blazing suns, many far exceeding our sun in magnitude and brilliancy, but so immeasurably — so *unimaginably* distant that the telescope discovers no disks — no dimensions at all — only inappreciable points of intense light.

(10.) **Constellations.** — Now examine Pl. VIII. A. You there see two groups of fixed stars — that is two *constellations* — very conspicuous in our winter night-sky, namely, Orion (O-ri'-on) and Taurus (the

Bull). Such groups, from time immemorial, have been named after persons, animals or other objects and are drawn on maps as in the diagram. You perceive these groups bear little resemblance to the figures after which they are called. Century after century they appear in the same position with regard to each other. The three stars of Orion's belt thus always remain in a straight line with Sirius. The cluster, Hyades (hy'-a-dēz), for thousands of years, has thus represented the letter V. with the red star Aldebaran (al-de-bā'-ran) at one of its extremities; although this letter V., as is the case with other groups and constellations, *seems* to be continually moving through the heavens (around the earth) and consequently always changes its position relative to the person looking at it. You will see the same constellations in the picture of the heavens (Pl. I. A.). Point out there Pleiades (plē'-ya-dēz), Aldebaran (in the Bull's eye), the two stars in the tip of the Bull's horn, Orion's belt, Sirius. You would do well, on the first clear winter night, to seek out and recognize these constellations and stars in the natural heavens, of which they form the most brilliant ornaments. We shall presently explain why Pl. I. A. is entitled: "Imaginary view from Neptune."

(11.) **Milky Way.** — As the night grows darker, we become more aware of a wonderful, luminous belt or ring, irregular in outline, breadth and density, extending across the entire heavens, like a zone of indistinct clouds or a river rolling in soft waves of light. During many ages the world was unable to account for this. The telescope shows it to consist of masses upon masses of stars. (Pl. I. A.)

(12.) **Planets.** — A slight study of the heavens enables the eye to detect, among the other stars, several, distinguished by the peculiarity that they do not *generally* sparkle like the fixed stars, but shine with a soft steady light, like that reflected from the moon. These are called *planets* (wanderers), because, while

the fixed stars remain thousands of years in the same position relative to each other, the planets, on the contrary, move or *wander* about, among the fixed stars, backward and forward—so that, in a few nights, we can observe that they have greatly changed their position with regard to the fixed stars, and to each other. When we say, however, that they wander *among* the fixed stars, we do not mean that they are as far off as the fixed stars. They are very, very much nearer. They belong to our solar system—heavenly bodies wheeling, at different distances, in the *same direction*, and nearly in the same plane, around the sun. While wheeling around the sun they, at the same time, and in the *same direction*, revolve on their axes. These planets do not, like the fixed stars, shine with their own light, but are dark, opaque bodies like our earth. They appear bright, only because they reflect back the light received from the sun, as a wall, or a house, or a distant mountain would. Our earth would appear just as much like a star and just as bright, if we could stand on one of *them* and look at it. Among the fixed stars (Pl. I. A.) you will easily distinguish two planets.

(13.) **Solar System** — eight principal planets revolving around the sun: (Pl. VIII. B.) Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus (U'-ră-nus) and Neptune; (with asteroids, moons, comets and meteors.)

(14.) *Remark.* The discovery of a new planet, *Vulcan*, has been announced, about half way between the orbit of Mercury and the sun.

(15.) **Asteroids.** — Between Mars and Jupiter is a space in which a number of very little worlds, some of them not larger than Long Island or Cuba, revolve around the sun. They are called *Asteroids*. Eighty-six had been discovered in 1867.

(16.) **Planet Neptune** — is the most remote from us and from the sun, nearly 3,000 million miles. No human being can conceive this distance. Were it possible to construct a railroad to Neptune, and the train travelled at the rate of 40 miles an hour, day and night, without stopping a single moment, it would reach him in about 8,000 years; a cannon ball in 456 years; a rapid pedestrian, without stopping to eat or sleep, in about 80,000 years. To walk along the entire path (Pl. VIII. B.) which Neptune describes around the sun, would require 480,000 years. A ray of light comes from Neptune to the earth in $5\frac{1}{2}$ hours.

(17.) **Light-Years.** — The distance of Neptune is very wonderful compared with any we can measure on our earth, but the fixed stars are so prodigiously remote that, in proportion, the space between us and Neptune diminishes to almost nothing. It would be useless to speak of pedestrians, railroads or even flying cannon-balls, with reference to fixed stars. Astronomers have sought a different standard, namely *light*. Light passes 200,000 miles in a second. It could go 8 times around our earth while you count *one*. It comes from the sun (Pl. VIII. B.) to the earth in 8 minutes 18 seconds. It traverses the whole breadth of the solar system (B.) in 11 hours. Who then can imagine the distance it travels in a year? Between 6 and 7,000,000,000,000 (seven billion) miles. This distance is called a *light-year*. A billion is a million times a million. It would take 30,000 years, night and day without stopping, to count one billion. Yet the nearest fixed star, alpha Centauri, (Pl. VIII. C.) is so remote, 20 billion miles, that it takes a ray of light $3\frac{1}{2}$ years to traverse it. Thus that distance is called $3\frac{1}{2}$ *light-years*. It would take, therefore, more than 600,000 years to count the distance in miles of the *very nearest* fixed star. Now what is a light-year?

The distance which a ray of light traverses in one year. And what is that distance? Between 6 and 7 billion miles. And what is a billion? A million million.

(18.) *Remark.* 1. The teacher will, according to his discretion, put similar questions where they are not found in the text.

2. Among the French, a billion is a thousand million.

(19.) **Distance of other Fixed Stars.**—Pl. VIII. C. will help you to conceive the amazing distance of even the nearest fixed star. Our entire solar system, whose dimensions are described in sec. 16. is, in Pl. VIII. C., only about as large as the head of a pin. This is the reason why the fixed stars would appear materially in the same form and groups, and at about the same distance, whether seen from Neptune or from our earth. It would make almost as little difference which one of the planets we view the *Fixed-Star World* from — as which house of a city, or which story of a house. What is the reason? *Because the distance is so great that, in comparison, the whole size of the solar system would scarcely be greater than the head of a pin.* Pl. VIII. C. gives the distance of the principal stars which have been measured. The star called alpha Centauri — $3\frac{1}{2}$ light-years; that numbered 61 in Cygnus — $9\frac{1}{2}$; Vega — $13\frac{1}{2}$; Arcturus — 26; Sirius — 22; iota, in Great Bear — 25; Polar Star — 31; Capella — 72. These stars are *the very nearest* to our solar system. The others are too distant for measurement; the Milky Way, thousands of light-years; other starry systems, called *nebulae*, nearly invisible except through a telescope — probably millions of light-years distant. In Pl. VIII. C. the solar system is given as a *point*. The fixed stars, alpha Centauri, etc., are at different distances from it. The dotted lines do not give the relative distances, as the figures do. Supposing the solar system to be a point,

the distance of that nearest fixed star, alpha Centauri, could be given only by a line 2,500 times longer than the diameter of the earth. The circumference, therefore, of the diagram would require to have a diameter 5,000 times greater than that of the earth, or about 40 million miles; and even then the sheet would be only large enough to take in alpha Centauri. What then must be the dimensions of a sheet large enough to take in the North Star and Capella, to say nothing of others.

(20.) **Imaginary view of the heavens from Neptune — Our earth a star.** — We cannot see Neptune from our earth with the naked eye; scarcely with a telescope. Indeed his existence was unknown till 1846. He is far larger than the earth, his diameter being more than 4 times greater. Suppose we had a Car propelled by light in which we could visit the heavenly bodies. Imagine yourself (Pl. I. A.) thus arrived upon that dark, cold and remote planet. The starry heavens are drawn as they appear from our earth on a winter night. You easily recognize Orion and his belt; Taurus, with the two clusters, Hyades and Pleiades; and two stars in the tip of the Bull's horn; the brilliant star Aldebaran; Sirius, etc. The sun, although from our earth too dazzling to be looked at, seen from Neptune, would dwindle to a mere point scarcely distinguishable from Sirius, Aldebaran, etc. From Neptune he would appear 1,300 times weaker than from our earth. The brightest noon-day of summer in that planet must probably be as dark as one of the earth's darkest nights. The stars would be clearly visible. Although from Neptune we should see the same fixed stars as from our earth, several of the *planets*, which ornament our sky, would not be visible, at least to the naked eye. A glance at Pl. VIII. B. will show the reason why Mercury, Venus, Mars, Jupiter and Saturn are visible to us inhabitants of the earth; Uranus, scarcely; Neptune, not at all with the

unassisted eye. From Neptune, on the contrary, we should easily distinguish those nearest him — Uranus, Saturn and Jupiter. Two of these will be found in the picture (Pl. I. A.). If really on Neptune, we should naturally cast our eyes over the heavens in search of the little planet on which we live. It would be too distant. (Pl. VIII. B.). If we had a sufficiently powerful telescope, however, we should detect, very near the sun, a small star — a distant point of light — an atom of gold dust floating in free space among the millions of other worlds. That is our Earth. (*star nearest the sun, Pl. I. A.*) ♀

(21.) **Nearer view of the Earth.** — Let us now leave Neptune in our Light-Car, and instead of visiting any other heavenly body, let us choose a point in free space so near that the earth would appear somewhat as it does in Pl. I. B. We, here arrest our Car in full sight of the earth, to explain the meaning of several terms connected with Astronomical or Mathematical Geography. Take Pl. VIII. and Pl. I.

(22.) **The Earth an oblate spheroid.** — Pl. I. B. You there see the earth—a round body—an orb—a sphere—a globe. A globe is a round spherical body whose surface is, in every part, equally distant from the center. What is a globe? The earth is so nearly a perfect sphere that it would not be possible to represent it correctly in a picture except by an absolutely spherical figure. Its stupendous mass, however, has been measured with wonderful accuracy and the discovery made that it is *not* a perfect sphere. It was once, and perhaps still is, a flexible body—that is, yielding and capable of being bent without breaking. By its diurnal rotation, the equatorial mass has been thrown a little out and the parts about the poles, in a corresponding degree, drawn in. Its circumference, at the equator, is 24,840 english statute miles; its polar circumference less. Its diameter is, therefore,

greater at the equator than at the poles, the former 7,907 $\frac{2}{5}$ miles; the latter 7,880 miles. The difference therefore is 27 miles, very little compared with the dimensions of the whole planet; each pole being only about 13 miles nearer the center than the equator is*). Its real figure is called an *oblate spheroid*, that is, a figure not absolutely a sphere. Pl. VIII. M. gives the real figure of the earth but, of course, in an exaggerated form. The same Plate (D.) gives the earth with notes of its dimensions.

(23.) **Axis — Pole — Revolution — Rotation.** — Pl. VIII. E. represents a wooden globe with an iron rod passing through its center and projecting at each extremity. One end of the rod rests on the floor, the other is held by my hand. Now suppose this globe to turn over and over on the rod from the direction of the word *west* to that of the word *east*. It would revolve or rotate on the rod from west to east. The rod would be its *axis*; the points of the two extremities, where they reach the circumference, would be the two *poles* of the globe. The two poles then are the only two points of the globe which do not revolve; and, remember, the N. Pole of the earth, during its whole annual revolution around the sun, always points to the N. Star.

Now look at Pl. I. B. The earth revolves in this way on its axis from W. to E. and in the same oblique position as the wooden globe in the diagram, with its N. Pole pointing to the N. Star. Only it has no rod. The earth and other planets revolve on

*) It may not be superfluous to quote here, for the more advanced student, the following remark of Sir John Herschel (1866). "We have good reason to believe the equator to be not strictly circular, but in some degree, elliptic, the proportion of its greatest and least diameters not being yet precisely known, though very much nearer to equality than that of the equatorial and polar diameters."

their axes, in the void of space, unsupported by any rod, floor or hand, except that of the Creator.

“He hangeth the earth upon nothing”

The axis of the earth in B. is represented by a line drawn through the earth's center. Those two points, where the axis reaches the circumference of the earth, are called its *poles*. A man standing in the picture B., where the word *west* is written, would be carried completely around by the rotation of the earth, and would thus, in 24 hours, get a view of every portion of the celestial sphere (8). But a man standing at the N. Pole, immediately beneath the N. Star, would not be carried away from that position at all. The N. Star would be in his zenith directly above his head and would remain so during the whole rotation; although the rest of the heavens above his horizon would seem to revolve around him without ever descending beneath his horizon. What is the earth's axis? *An imaginary straight line, on which the earth revolves, from west to east, once in every 24 hours.*

(24.) *Remark.* Speaking with astronomical accuracy, the earth revolves once every 23 hours 56 minutes 4 seconds and nine one hundredths of a second. This daily rotation is performed with a punctuality which has no parallel within human knowledge. It has not varied one-tenth of a second in 2000 years.

(25.) **North Star and Great Bear.** — The earth is surrounded on every side by stars (Pl. I. B). Wherever we travel over its surface, we find the night heavens scattered with thousands, and, when observed through a telescope, thousands of millions of stars. One of these, the *North Star* or *Polar Star*, is always to be found in our heavens over the back of the constellation, the Great Bear. Its position may be seen in Pl. VIII. F.

You will easily recognize the Great Bear on any clear night and the two stars called the *pointers*, point-

ing to the N. Star. In the course of 24 hours the Great Bear and all the stars of the heavens seem to revolve around the N. Star. The diagram represents the Great Bear at 4 different periods of the 24 hours — at 6 o'clock in the evening, 12 in the night, 6 in the morning, 12 the next day (noon). At the latter hour he is of course invisible on account of the daylight.

(26.) *Remark.* He does not always stand with his feet toward your horizon at 6 o'clock in the evening. He stands with his feet toward your horizon once every 24 hours; but is seen in that position, at 6 o'clock in the evening, only once during the year.

(27.) **North Star stationary.** — The N. Star is thus the only star which does not seem to revolve every 24 hours; the reason has been seen (Pl. I. B. and Pl. VIII. E). As the earth revolves from W. to E., the whole heavens appear to revolve from E. to W. As the N. Pole of the earth points to the N. Star, and the poles are the only points of the earth which do not revolve, so the N. Star is the only point of the heavens which does not seem to revolve.

(28.) **Axis of the heavens — apparent daily revolution of the Celestial Sphere upon it.** — Pl. I. B. shows a line reaching through the earth's center across the heavens to the N. Star, and to a corresponding point in the southern heavens.

The axis of the heavens is an imaginary line *identical**) with the axis of the earth, but a prolongation of it. The entire hollow sphere of the starry heavens appears to revolve upon it from E. to W., and the northern extremity of it passes through, or very near the N. Star.

*) Identical; the same; not different; from the Latin *idem*, the same.

As the earth, with its N. Pole always pointing to the N. Star, revolves, once every day, on its imaginary axis, from W. to E.—, that motion makes the great starry concave, called the *Celestial Sphere*, seem to revolve, once every day, from E. to W., on the imaginary line called *the axis of the heavens*. The atmosphere, forming an envelope around the earth about 500 miles high, accompanies the planet in all its movements, with no other consequent disturbance than some periodical winds. Thus—the clouds—the birds—man—the atmosphere itself—are borne softly around, with the earth, in its annual and diurnal rotation. *Ether*, which is believed to fill all space, is too rare and delicate to offer any perceptible resistance; so that we are unconscious of the earth's motion and have no means of discovering it, except by watching disconnected objects, quite apart from it, and not moving with it, such as the sun, moon and stars. These of course seem to revolve (that is, the Celestial Sphere, in which they appear fixed, seems to revolve) in a contrary direction, on an axis exactly corresponding to the earth's axis, that is the axis of the heavens;—and with a point of the heavens which does not seem to revolve, corresponding to that polar point of the earth's surface which really does not revolve—that is the pole—one of the poles, of the heavens.

(29.) **North — South — East — West.** — (Pl. I. B.) *North*, toward the North Pole; *South*, toward the opposite Pole. When you stand on the globe's surface with your face toward the North Pole, your right hand is toward the *East*; your left toward the *West*.

(30.) **Equator of the earth — hemisphere.**— The equator is a large circle supposed to be drawn around the earth equi-distant from both poles. It is marked upon the earth in Pl. I. B. It divides the globe into two equal parts, *Northern hemisphere* and *Southern hemisphere* (*half sphere*). We often hear

also the terms *Eastern*, *Western*, *Land* and *Water* hemispheres. Each half of the globe is a hemisphere.

(31.) **Sensible Horizon.** — Wherever we are — on a plain, at sea, on a desert, on a mountain — we have a *circular* view. A circle appears drawn around us, beyond which we can see no more of the earth's surface and no more of the etherial concave. At the center of this circle we stand; at the circumference of it, the earth and sky seem to meet. This circle — when applied to our earth — is called our *sensible horizon* (from the Greek *orizo*, I terminate). It contracts or enlarges of course according to the elevation of the spectator. Upon the ocean, supposing our eye to be elevated 5 or 6 feet, the diameter of the sensible horizon would be only about 3 miles. The summits of lofty objects, as a mountain or the masts of a ship, can be seen at a greater distance — in favorable weather the Peak of Teneriffe at the distance of a hundred miles. Now what is the sensible horizon? *It is a small circle, bounding our view of the earth's surface, in the center of which we stand and at the circumference of which the earth and sky seem to meet.*

(32.) **Rational Horizon.** — If we were suspended (in our Light-Car) in free space, the earth not existing at all, how would the heavens appear? A vast, hollow sphere, of which we should see *the whole* interior. The Milky Way would present itself a continuous ring, one half over our head, the other, beneath our feet. There would thus be no horizon, either sensible or rational. As, however, we stand, not in free space, but upon the stupendous, convex globe, our view is quite different; and, wherever we stand upon its surface, we can see, never the whole, but always exactly one half of the Celestial Sphere. The other half is of course hidden by the globe itself; and our view is limited by a great circle of which our eye forms the central point. This

great circle is called our *rational horizon*. Thus the rational or true horizon divides the heavens into two equal parts, the one visible, the other invisible. These two horizons are in one sense the *same*. While the term *sensible horizon* is applied to the *small* circle which terminates our very contracted view of the earth's surface, the term *rational horizon* is applied to that *great circle which terminates our view of the immense celestial concave, cutting off the lower half of it from our sight*.

Now what is the rational horizon? You will not, perhaps, immediately understand what is meant by the further explanation that the rational horizon is also an *imaginary plane* extending through the center of the earth on every side to the starry heavens, thus cutting into two halves, both the heavens and the earth. The sun, moon and stars become visible to us, when they rise above this plane.

(33.) **Zenith** — is that point of the visible celestial sphere vertical to the spectator, that is, directly over the place where we stand.

(34.) **Nadir** (nā-dir) — is that point of the heavens directly opposite the zenith—directly under the observer's feet. A perpendicular line drawn from the zenith through the spectator and through the center of the earth would extend to the nadir. At noon, 23. of June, a person on the tropic of Cancer would have the sun in his zenith. The center of the sun would be vertical, that is, exactly over his head. (Plate I. B.). Zenith and nadir are arabic terms.

(35.) **Right line or straight line** — shortest line between two points.

(36.) **Curve line** — a line which departs continually from a direct course.

Remark. 1. The diagrams referred to in sections 35 to 55 will easily be found in Pl. VIII.

2. Our plan requires that the pupil should not be instructed, at this stage of his studies, on any other points than those presented in the text. The subjects explained have reference to future lessons. As much care has been taken to exclude explanations not yet needed as to furnish those necessary. The object is not to teach Geometry or Astronomy, but Geography; and that, only ascending step by step.

(37.) **Parallel lines** — lines extended in the same direction and equally distant from each other throughout the whole length.

(38.) **Oblique lines.** — *Oblique* means slanting. *Oblique lines* are such as are inclined toward each other from a direct line, whether horizontal or perpendicular.

(39.) **Horizontal line** — a level line parallel to the horizon.

(40.) **Perpendicular line.** — When one straight line stands upon another, so as to make the angles on each side equal to each other—that is, neither leaning to one side nor to the other—the lines are said to be *perpendicular* to each other—as in the diagram entitled “right angle”.

(41.) **Angle** — is the space comprised between two straight lines that meet in a point.

(42.) **Right angle** — formed when one right line intersects another right line perpendicularly.

(43.) **Acute angle** — is less than a right angle.

(44.) **Obtuse angle** — is greater than a right angle.

(45.) **Circle — Center.** — A *circle* is a single curve line, every part of which is equi-distant from a point called its *center*.

The six following sections describe PARTS OF A CIRCLE (Pl. VIII. Q):

(46.) **Circumference** — The curve line that encompasses a circle—about three times the diameter.

(47.) **Arc.** — any portion of the circumference of a circle. In the figure there are three arcs and three chords (P).

(48.) **Chord** — a right line joining the extremities of an arc (P).

(49.) **Diameter** — (Q) a straight line from any point of the circumference passing through the center to the opposite point. It divides the circle into two equal parts.

(50.) **Radius** (*rā-di-us*) — a straight line drawn from the center to the circumference. All radii of the same circle are equal to each other and each is half the diameter. *Radii*, the plural of radius.

(51.) **Quadrant** — one quarter of a circle or 90° (the circle being divided into 360°). The circumference of the globe, from the equator to the pole, is 90° —that is a quadrant.

(52.) *Remark.* The terms *circumference* and *diameter* are equally applied to a globe and other solid bodies.

(53.) **Concentric Circles** — (P) are circles drawn within each other which, although of different dimensions, have a common center.

(54.) **Great Circle — Small Circle.** — A circle drawn around the earth may be either great or

small. A great circle passes around its greatest circumference and divides its surface into two equal parts or hemispheres. The equator, therefore, is a great circle. The meridians are great circles. The ecliptic, sometimes drawn upon maps and globes (E), is also a great circle. All other circles drawn around the earth are small circles. In Pl. VIII. S. you see the equator drawn completely around the globe as a great circle, while the two tropics and the two polar circles appear as small ones. Examine the great and small circles upon all the figures of the earth in Pl. I.

(55.) **Ellipse — Foci.** — (P) An ellipse is an oblong figure, such as a circle would appear if held obliquely (as the cart-wheel *b* in Pl. VIII. L.). The figure of an ellipse is described around two points, called its *foci* (the plural of focus).

(56.) **Latitude** — upon the earth, is distance from the equator, north or south, reckoned toward the poles in degrees, minutes and seconds. In Pl. VIII. R. you see the equator and four parallels drawn at 20° N. lat., at 40° , 60° and 80° . There is also the same number of south parallels. The pole is of course at the 90° of latitude. No place can be farther from the equator than the pole; so no place can have a higher latitude than 90° .

(57.) **Parallels of Latitude** — shortly called *Parallels* — are small circles supposed to be drawn around the earth parallel to, and at different distances from, the equator (R).

(58.) **Longitude** — distance of a place, E. or W., from any given meridian. It is marked by the arabic figures on the equator, and, like latitude, in degrees, minutes, and seconds. (R).

(59.) **Meridians** — great circles supposed to be drawn around the globe and to pass through the

poles of the earth, intersecting the equator at right angles. Each of them divides the sphere into two hemispheres. (R). For parallels and meridians see also all figures of the earth in Pl. I. Point out there the parallels? the meridians?

(60.) **Degrees — Minutes — Seconds.** — A circle is supposed to be divided into 360 equal parts. Each part is called a *degree*, expressed by a small sign, thus ($^{\circ}$). Take Pl. VIII. T. Each degree is subdivided into 60 equal parts, called *minutes*, marked by a comma thus ($'$), and each minute is subdivided into 60 equal parts, called *seconds*, marked by two commas thus ($''$). We write 10 degrees, 5 minutes, and 4 seconds (as in T)— $10^{\circ} 5' 4''$.

(61.) **How an angle is measured.** — An angle is measured (Pl. VIII. T.) by making its sides radii of a circle and taking the length of the arc in degrees, minutes, and seconds.

Diagram T. (Fig. *a*) shows a circle divided into 360° . You must imagine each degree to be subdivided into $60'$, and each minute into $60''$. Fig. *b* shows a right angle measured on the arc of the circle, the arc here, being exactly a quarter of the circle, measures 90° . In Fig. *c* the two lines *e. f.* form an acute angle of $23^{\circ} 27' 26''$ (twenty-three degrees, twenty-seven minutes, twenty-six seconds). The two lines *g. h.* form the same angle of $23^{\circ} 27' 26''$. The Fig. *c* is drawn in the same position as that in which the earth holds itself in its annual journey around the sun. The line *g* represents the equator, the line *h* the ecliptic, or the plane of the ecliptic, or the plane of the earth's annual orbit or path around the sun. Hence we say the equator is inclined to the ecliptic $23^{\circ} 27' 26''$.

(62.) **Remark.** Young people who cannot comprehend what is meant by such phrases as "*inclination*

of the equator to the ecliptic" — "*plane of the ecliptic*" — "*plane of the earth's orbit*" — "*earth's axis leans $23^{\circ} 27' 26''$ toward the ecliptic*", etc. — must not be discouraged. Let them mark these phrases well, whether they understand them or not; and the meaning will, we trust, become gradually clear. It is scarcely possible for an inexperienced student to grasp these ideas by any single explanation. He must, by a series of explanations, following each other in a carefully arranged succession, slowly ascend to a point, where the earth's true position, with its axis inclined toward the plane of its orbit, and thus holding itself obliquely as it annually moves around the sun, will at last break upon him, like the effect of a stereoscope. Hence our readers will find several apparent repetitions which however are not accidental, but premeditated.

(63.) **Plane.** — When a ball rolls on a level meadow or floor, it rolls on a plain. The solar system consists principally of the sun with eight planets revolving around him in nearly the same level or plane, as if they were rolling on a floor. The word *plain* means smooth—even—level—flat—without elevations or depressions. But when astronomers describe the planets revolving around the sun, all of them in about the same level, just as if they were rolling on a great level or plain in space, they use the word *plane*.

Pl. VIII. G. will aid in giving an idea of the plane of an orbit and how planes may be inclined or perpendicular to each other. It represents the interior of a room. At *A*, the planets revolve on the plane of a floor; at *C*, on an inclined part of the ceiling; at *B* and *D*, on two walls perpendicular to each other and to the floor. We here see that the expression, the "*earth's orbit*" and the "*plane of the earth's orbit*" are not to be confounded with each other. The line marked "*earth's orbit*" describes the path which the earth pursues around the sun. It is therefore a

line—a curve *line*. The *plane* of the earth's orbit is the level or plane in which this line or orbit lies, that is, in which the earth revolves. In Pl. VIII. G. it is the floor or the walls or the ceiling. In the solar system itself, there is no floor; but the earth and planets revolve in about the same plane, as if there were a floor. That *imaginary floor*, extended out in every direction, is the plane of their orbits. Pl. VIII. L. will help you to understand this.

A cart-wheel is held up to your eye in different positions. At *a*, it is a circle. You have only to suppose the sun in the center, and then the circumference or tire of the wheel to be the orbit of the earth. You can hold it up before you so that the tire will appear a circle. If you were directly above the orbit of the earth, it also would be a circle, as at *a*. If you were to take another stand-point, half on one side, the earth's orbit would appear as in *b*. But if you were to go *quite* on one side of the earth's orbit, it could then be represented as a straight line, as in *c*. Your eye would then be said to be in the plane of the earth's orbit.

The earth's orbit then is, in *c*, represented as a line; and the plane of the earth's orbit is represented as a line. A figure of the earth is drawn in the wheel *c* to show the inclination of the axis and the equator, to the plane of the orbit. The equator, as we have seen, forms an angle of $23^{\circ} 27' 26''$; and the axis leans, from a perpendicular, $23^{\circ} 27' 26''$.

In B and C, Plate I., the earth is drawn in this position, and the orbit and the plane of the orbit are represented by a line instead of a circle. In D, the orbit is drawn as the wheel at *b*. In Pl. VIII. B. the orbits of the planets are seen from the same stand-point as the wheel at *a*.

(64.) **Ecliptic** — plane of the ecliptic — angle formed by the equator and the plane of the ecliptic. — When we look on the circle which

the earth describes around the sun (Pl. VIII. G.), we call that the *orbit of the earth*. But as we stand upon the earth, we are not conscious that the earth moves annually around the sun. It seems to us that the *sun* moves annually around the *earth*. The circle, in which he seems to move, is called the *ecliptic*. Thus the *ecliptic* must be defined by a double definition. First, it is the orbit in which the sun *seems* to move once every year around the earth. Secondly, it is the orbit in which the earth *really* does move once every year around the sun. In Pl. VIII. G. you have several views of the earth's orbit; in one, Mercury, Venus and the Earth revolve on the *floor*. The *line* in which the earth there revolves around the sun, is the earth's *orbit*; the *floor* is the *plane of the earth's orbit*. But, remember, to the people *upon* the earth, the earth *seems* to stand still and the *sun* seems to go around the earth in a circle just like that in which the earth goes around the sun. The *orbit of the earth*, therefore, is the *ecliptic*, and the *ecliptic*, although it does not so appear to us, is, in reality, the *orbit of the earth*. They are quite the same. The floor is, at the same time, the plane of the earth's orbit and the plane of the *ecliptic*.

Now when we describe the position, in which the earth holds itself as it goes around the sun, it is usual to represent the plane of the *ecliptic* as a line and thus to show what angle the equator forms with it. Pl. I. B. and C. show it clearly. The earth holds its axis with regard to the *ecliptic* so that the equator forms an angle of $23^{\circ} 27' 26''$.

Astronomers, in describing the earth's position, therefore, say "*the obliquity of the equator is $23^{\circ} 27' 26''$* ". The earth's position may be described however in another way. The axis is *inclined $23^{\circ} 27' 26''$ toward the ecliptic*; i. e. away from a perpendicular line. In Pl. I. B. the line of the shadow forms the perpendicular and the distance of the N. Pole from that line

is $23^{\circ} 27' 26''$ —exactly the same as that from the ecliptic to the equator.

Remark. We have now commenced to acquire some idea of various terms generally used in explaining the four seasons. These expressions will become clearer as we proceed; explanations of other terms will be added.

SEASONS.

(65.) **Succession of Seasons.** — For thousands of years, mankind vainly endeavored to account for the phenomena of the seasons. At one period, we are conscious of oppressive light and heat; at another, as if we had passed into a gloomy shadow, we suffer from darkness and cold. Spring and autumn bring days and nights equal all over the globe. In our midsummer, the sun remains 12 hours above the horizon at the equator; 24 hours at the arctic circle; and 6 months at the N. Pole. In our midwinter, the sun remains *beneath* our horizon 24 hours at the arctic circle and 6 months at the N. Pole. As man became better acquainted with the shape and surface of our planet, it was discovered that the S. hemisphere underwent the same ever varying revolutions of heat and cold, winter and summer as the N. hemisphere, with a perfectly mathematical correspondence, except at diametrically opposite periods. These changes follow each other annually with extraordinary regularity. They were explained, about 300 years ago, by Copernicus, who demonstrated that the earth was *not* a *fixed point*, with the sun and heavens revolving around it, as, to its inhabitants, seems to be the case; and as Ptolemy and other learned men had taught; but that it daily rotates, on its axis, and, at the same time, moves annually around the sun.

By the aid of Pl. I. we shall find the causes of

the seasons to be as simple as the reason why the sunny side of a house is warmer than the shady side; or why one side of a house may be shady in the morning and sunshiny in the afternoon.

(66.) **Earth at midsummer.** — In B. we have the earth, 21—23 June. You see the equator drawn equally distant from either pole. N. of equator are two parallel circles—tropic of Cancer and arctic circle; S. of equator—tropic of Capricorn and ant-arctic circle.

Remark ten phenomena:

Summer and longest day in N. hemisphere.

Winter and shortest day in S. hemisphere.

Greatest inequality in length of day and night everywhere except on equator. This inequality increases as you approach either pole—i. e., the day is longer, the farther you go N., till you come to a region where there is no night at all; and the day is shorter, the farther you go S., till you come to a region where there is no day at all.

Sun's center as far N. as tropic of Cancer.

Within arctic circle no night.

Within antarctic circle no day.

At point of N. Pole, noon of a day which lasts six months.

At point of S. Pole, midnight of a night which lasts six months.

Between arctic circle and N. Pole (that is everywhere within arctic circle), a day varying in length from 6 months to 24 hours (with a night the same in the antarctic circle).

Between arctic circle and equator, a day varying from 24 hours to 12 hours, and between the ant-arctic circle and equator, a night varying from 24 hours to 12 hours.

Every season, in one hemisphere, exactly the reverse of that in the other.

That is the state of our earth on 21—23 June.

(67.) **Suppose earth stationary 23. June.** — If the earth did not move in its annual orbit around the sun, this condition would be permanent. The daily revolution would never bring any point lying within the arctic circle away from the sun's rays, nor any part within the antarctic circle out of the earth's shadow. At one pole, it would be uninterrupted summer and day; at the other, uninterrupted winter and night. The condition of the countries lying on or near the equator would scarcely be changed from that which they actually always enjoy; except that those lying on tropic of Cancer would have the central point of the sun in their zenith permanently; while those on tropic of Capricorn would see him far to the North. We, in the United States, should have an unchanging summer, always long days and short nights, as on the 21—23. of June. The length of the day and night, at any given latitude, would never vary.

(68.) **Earth at midwinter.** — PL. I. C is an illustration of the four seasons. The earth is visible at 3 points of its orbit. A figure of the earth is supposed to be also at the point, opposite 2. (of course on the other side of the sun and thus hidden from our eye). At 1., we have the earth as already given in B.; 3. represents the earth on the 23. of December. Point out these; name the 5 principal circles.

The ten phenomena, marking the 23. of June, are here exactly reversed.

Winter and shortest day in N. hemisphere.

Summer and longest day in S. hemisphere.

Greatest inequality in length of day and night everywhere except on equator, but in an inverted order; and in a ratio always increasing as you approach either pole.

Sun's centre as far S. as tropic of Capricorn.

Within arctic circle no day.

Within antarctic circle no night.

At the point called S. Pole, noon of a day which lasts six months.

At the point called N. Pole, midnight of a night which lasts six months.

Between antarctic circle and S. Pole (that is everywhere within antarctic circle), a day varying in length from 6 months to 24 hours (with a night the same in the arctic circle).

Between antarctic circle and equator, a day varying in length from 24 hours to 12 hours (night the same from arctic circle to equator).

Condition of equatorial regions little changed. Only difference—the central point of the sun lies perpendicular over tropic of Capricorn instead of tropic of Cancer. The people on the equator have him on the S., whereas on the 23. of June, they have him on the N.

(69.) **Solstices and Equinoxes.** — Let us now (C) follow the earth in its annual movement around the sun and watch the coming on and passing away of the summer, autumn, winter and spring. We are supposed to be in a position, where the orbit of the earth is turned toward us, like the edge of the wheel in Pl. VIII. L. (fig. c)—that is where our eye is in the plane of the earth's orbit. Thus we see the orbit not as a circle, but as a line. Now take Pl. I. C. again. The earth is represented in 4 points of its orbit—1. summer solstice (N. hem.) 2. autumnal equinox; 3. winter solstice; 4. spring equinox (at the point exactly opposite to and behind the sun).

(70.) **Summer solstice.** — Fig. 1 represents the earth as having reached the point of midsummer, the 21 of June. It is here at its *summer solstice* (from two latin words, meaning the *sun* and to *stand*), because, at this part of the year, from the shape of the earth's orbit, and the inclination of its axis, the increase and decrease in the length of day and night are, for

some days, less than usual. The earth thus seems to stand still. The sun thus seems to stand still.

(71.) **Autumnal equinox.** — We behold the globe move slowly around in the direction of the arrow. In three months, it reaches the position of Fig. 2. It is then the 21. of September — our autumnal equinox.

Which pole is there turned the most toward the sun?

Neither one nor the other. Each pole is turned equally toward him. The earth is turned *sideways* toward him. The sun's center is directly over the equator. He is said here to cross the equator, because he is just now in the zenith of the people on the equator. In Fig. 1., our midsummer day, he was in the zenith of the people on tropic of Cancer; in Fig. 3., our midwinter day, he will be in the zenith of, that is — *vertical* to — the people on tropic of Capricorn. At Fig. 2., our autumnal equinox (21. of Sept.), he is vertical to the people on equator who see him *exactly over their head* (only for one day) because he is passing on his way from tropic of Cancer to tropic of Capricorn. At Fig. 4., he will cross the equator again on his way back to tropic of Cancer. He is thus said to *cross the equator*, or to *cross the line*, at our autumnal and spring equinoxes. In Fig. 2., the whole of the E. hemisphere is turned toward the sun's light; the whole of the W. hemisphere is turned away from it. It is therefore, at this moment, *midnight* in America and *noon* in Asia; and the days and nights are equal on every part of the earth's surface — 12 hours night and 12 hours day at the equator — also 12 hours night and 12 hours day at each of the two poles. This, and the corresponding opposite point of the year, are called *equinoxes* (from two latin words signifying *equal* and *night*.) It is called our *autumnal equinox*, because it is autumn. We are just half way on our journey from the point where we had the longest

summer day, to the point where we shall have the longest winter night.

What is the condition of the two poles at Fig. 2?

The N. Pole has its autumnal equinox. Day and night are equal. It is just bidding adieu to its long summer and entering upon its long winter. The sun, which has been visible for six months, now sinks beneath the horizon, to remain invisible for the next six months. He will reappear at that pole about the 21. of March, when the earth shall have completely passed on to the other side of the sun.

At the S. Pole the condition is reversed. The sun is there just rising above the horizon, to remain till the 21. of March. Summer begins to break over the S. hemisphere. The days grow longer, the nights shorter.

(72.) **Winter solstice.** — Fig. 3. Watch the progress of our planet three months more. It slowly advances to the point 3., where we have winter in the N. hemisphere with the longest night and the shortest day. This is called, in the N. hemisphere, the *winter solstice*; of course it is the summer solstice in the S. hemisphere.

(73.) **Spring or vernal equinox** — In three months more, the earth moves to the point opposite that occupied by the central Fig. 2.; being covered by Fig. 2. and also by the sun, it is of course invisible on our Plate. It is now our *spring* or *vernal equinox*. Instead of bidding farewell to the summer, we are now advancing to meet that season. The phenomena of the autumnal equinox are here exactly repeated—the two poles turned neither toward the sun, nor away from him; the sun's burning orb exactly over the heads of the nations on the equator (of course at their noon) so that each pole receives an equal portion of his light; day and night are equal; exactly 12 hours

each, on every part of the earth's surface—even at the poles. This entire equality of day and night (or of light and darkness) which at the equator is perpetual, extends over the whole earth twice a year, and lasts only 24 hours.

(74.) **Unequal length of seasons.** — Pl. VIII. K. The seasons are not of the same length. In the N. hemisphere the winter is the shortest, the summer the longest. The autumn is shorter than the spring. The exact duration is given in the following table.

Winter 88 days 19 hours 29 minutes.

Autumn 89 " 17 " 24 "

Spring 92 " 21 " 11 "

Summer 93 " 13 " 56 "

The summer is thus 16 hours 48 minutes longer than the spring, and 4 days 18 hours and 17 minutes longer than the winter. The spring is 3 days 3 hours 47 minutes longer than the autumn.

Remark. We may well here pause to observe the *exactness* with which that divine creation, called the solar system, performs its operations. It has been seen that the time of the earth's daily revolution, for thousands of years, has not varied the tenth of a second; and here, the relative length of each returning season is found to be always precisely the same. It is true that, on looking *deeper*, there appears certain irregularities. But, on looking *still deeper*, these supposed irregularities are discovered to be limited by precise periods and to be in conformity to regular eternal laws. May we not infer that the moral world is also guided by the same supreme, omnipotent Intelligence—that its seeming irregularities are also measured by periods, and subject to laws, and that they will finally disappear altogether, or appear only as necessary parts of one harmonious whole.

Another phenomenon connected with the seasons presents a symmetrical correspondence in the S. hemisphere, where the above given inequalities of duration

in the N. hemisphere are diametrically reversed. The winter of the S. hemisphere is not only longer, but colder in proportion; and the summer, not only shorter but warmer in proportion. This would not be the case, if the earth's orbit were a *circle*. The seasons, in that case, would be of equal length. The sun would be in the *center* of the circle. The distance traversed by the earth, during each of the four seasons, would then be absolutely equal, and the earth would move, during these four seasons, and over every portion of her orbit, with the same invariable velocity. This equality is disturbed by the real form of the earth's orbit, which is not a perfect circle with the sun in its center. It is an ellipse with the sun, not in its center, but in one of the foci.

In Pl. VIII. K. the elliptical shape of the earth's orbit is given in an exaggerated form, in order to make more apparent the way in which the unequal duration of the seasons results from it.

Remark in this diagram: First. The two points of the earth's orbit, the most distant from each other, are not the summer and winter solstitial points, B and E., but the greatest length of the ellipse is between the points A. and D. Secondly. The earth, at its winter solstice, is much nearer the sun than at its summer solstice; and that the two lines *B. E.* and *C. F.*, drawn through the sun's centre and the solstitial points, and through the sun's centre and the equinoctial points, divide the earth's elliptical orbit into four unequal parts.

The earth, during our northern winter, passes from *B.* to *F.*; during the spring, from *F.* to *E.*; during the summer, from *E.* to *C.*; and during the autumn, from *C.* to *B.* again. It is plain therefore that it must traverse a greater distance, during the spring, and particularly during the summer, than during the autumn, and the still shorter winter.

The inequality in the duration of seasons is augmented by another circumstance. The earth moves,

with increased velocity, along those parts of the orbit which are nearest the sun (because it is there more exposed to the sun's attractive power,) and relaxes its speed in proportion to its greater distance. Hence, during the spring and summer, its velocity is much less than during the autumn and winter. The long spring and summer are thus made longer by the diminished velocity of our planet, while the increasing speed with which it passes through the rest of the ellipse, makes the short autumn and winter still shorter. This cause and effect are reversed in the S. hemisphere, where, as we have already seen, the seasons are reversed. Instead of having a long spring and a still longer summer—a short autumn, and a still shorter winter, it has a long winter, which corresponds in length to our summer; and a short summer which corresponds to our winter—an autumn corresponding in length to our spring; and a spring to our autumn.

The diagram shows the earth to be nearer the sun in winter than in summer. Our winter is nevertheless cold from the fact that the N. hemisphere is so far turned away from the sun as to receive its rays obliquely; but the S. hemisphere has its summer just at the point where the earth is nearest the sun, so that the intensity of the heat in summer is greater than in winter from three causes:

1. It receives the sun's rays more vertically.
2. It is nearer the sun than at any other period.
3. The earth at that time moves slower*).

*) The earth is about 3 million miles nearer the sun in winter than in summer. One would think the former season would, consequently, be the hotter. But, remark, two circumstances neutralize the effect of this proximity. 1) It occurs at the period when the N. hem. leans the farthest away from the sun. 2) Much heat is lost by the greater velocity with which our planet moves through that part of its orbit. In the S. hem., just the contrary. There, it is hotter, the *nearer* the earth is to the sun.

The same causes, reversed, increase the intensity of the southern *winter*, which takes place at our *summer* solstice, when the earth is *farthest* from the sun. The S. hem., then, receives the sun's rays, not only *obliquely*, but from a *greater distance*. And, as the earth, at that period, moves more slowly, the southern winter is so much the longer. The intensity of the winter, however, is counterbalanced by that of the summer. The same, inversely, in the N. hem. so that the mean annual temperature is about equal N. and S. of equator.

Remark. An *error*, in this description of the seasons, has been purposely left (last half of p. 32), that each pupil, who has followed the explanation *understandingly*, may detect and correct it.

(75.) **Earth and its orbit seen partly from above.** — Let us now pass to D. We are here supposed to stand, neither at a point directly *above* the plane of the ecliptic, where the earth's orbit would appear a *circle*, nor in the *plane* of the ecliptic, where the orbit must appear a *line*; but about *half way between* those two points, where the orbit appears, neither a line, nor a circle, but an *oval*, because the circle is *fore-shortened** (as in the cart-wheel. Pl. VIII. L. Fig. b.) We will now reconsider (Pl. I. D.) the earth's annual movement, beginning at the summer solstice. The ten phenomena are here, in the N. hem., still more visible. As we have taken a position somewhat *over* the N. hem., the S. Pole is, of course, invisible. Read again the ten phenomena of 23. June (66). By examining the earth (Pl. I. D. fig. 1) you will better understand the causes of these phenomena. You see how the N. hem. here leans toward the sun; why, within the arctic circle, there can be no night; why the N. hem. has now its summer and its longest day, etc. The arctic circle lies

* Fore-shortened: — in *painting* — represented as it would appear to the eye when seen obliquely.

in the sunshine 24 hours, that is, during the whole diurnal revolution; because the whole arctic circle is turned toward the sun. It takes the earth three months to come round to the autumnal equinox (fig. 2), where just one half of the arctic circle lies in the shadow. Day and night must, consequently, be there equal. Three months later, at the winter solstice (fig. 3), the arctic circle, for 24 hours, lies in the shadow. The daily revolution brings no part of this space into the sun's light. At the vernal equinox (fig. 4), one half the arctic circle is again in the light, and one half is in the shadow; giving thus, at the pole, and everywhere else, on that day, perfect equality of day and night. As the earth passes, from the vernal equinox, to the summer solstice again, equality of day and night begins immediately to disappear. With every revolution, the day, in our N. hem., becomes longer, the night shorter, the season more advanced, till we reach that point again (fig. 1), where the N. Pole is turned as far toward the sun as the earth's position will ever permit. We no sooner reach the longest day (fig. 1), than the movement of the ever advancing earth begins to change our condition again. The days begin to shorten. Remark, however, the next section.

(76.) **Sun stands still.** — At two points of the year—midsummer and midwinter,—the sun is said to *stand still*, because, for a short period, the days have scarcely any perceptible increase or decrease. You have already learned, first, that the sun is stationary in the center of the solar system, and that the planets roll around him; secondly, that, to the inhabitants of the earth, our planet does not seem to move at all, but to be a fixed point, while the entire heavens seem to move around it, once every 24 hours. In addition, the sun, and the whole starry sphere, seem to float slowly around the earth once in about 365 days. When astronomers say *the sun stands still*, they, of course, speak only of this last *apparent* annual movement around the earth,

which is nothing more than a reflection of the earth's annual movement around the sun. Thus the term "the sun stands still" means only "the *earth* stands still." But *does* the earth stand still? Certainly not. Yet, at the two *solstitial points*, (keep your eyes on fig. 1. D) the days remain, during several diurnal revolutions, almost exactly of the same length. This results from the fact that the inclination of the earth's axis, and the elliptical form of its orbit, are such, that the path of the sun, instead of being, as usual, N. or S., appears parallel to the equator, E. and W. He goes, for a time, neither N. nor S., but lingers in the tropic of Cancer. The days remain, therefore, of about the same length. Hence has arisen the word *solstice*; and the term, the "*sun stands still*".

Remark. 1. We abstain from many explanations indispensable to more advanced students—particularly students of astronomy—but which would be out of place in these lessons. When we say, for instance, the sun is *stationary* in the *center* of the solar system, we mean relatively. He is not, strictly speaking, in the *center*; neither is he *stationary*. He not only revolves on his axis, but he moves, in a kind of orbit, around his central point. In addition, he and all his family of worlds, are sweeping forward, probably in an unimaginable circle or ellipse, around an unknown center.

2. The ellipticity of the earth's orbit, in Pl. I. D, is not intended to show the real form of the orbit. It results merely from the circle being held up to the eye obliquely. The real ellipticity (22) is too slight to be represented on any sheet, as other than a circle. But, although exaggerated, the elliptical form in D, illustrates correctly one of the reasons why, at this point of the orbit, the sun, for several days, scarcely changes his declination.

(77.) **Four circles.** — *Remark.* In the 8 pictures (Pl. I), from E to M, the earth is drawn at its summer solstice (23. June). In E, F, G, H, your eye is

supposed to be in the plane of its orbit and you see four different points of the diurnal revolution, by which New York passes through the 24 hours. In I, you are exactly over the N. Pole. You see the six months day of the arctic circle (midsummer of N. hem.). In K, you are exactly over the S. Pole, with the N. Star on the opposite side of the earth. You there see the six months night of the antarctic circle (midwinter of S. hem.).

Figs. B, C, D, will enable you to understand *why* the four circles are drawn where they are. If the axis of the earth were perpendicular to the ecliptic, there would be no change of seasons; and the length of day and night would be always equal. There would be no regularly defined zones and no reason for the arctic or tropical circles. It is the *inclination* of the axis which brings the earth into the different positions seen in Pl. I. figures C and D.

Remark. Most of the figures on Pl. I. ought to be consulted during the examination of the circles, but particularly B, C, D.

(78.) **Arctic Circle.** — In this position (B), the shadow has receded from the N. Pole as far as it ever can. There is thus, around the pole, a circular space, out of the earth's shadow and in the sun's light during one diurnal rotation. The arctic circle describes the limits of this space. Its entire circumference can be seen only on D.

(79.) **Antarctic Circle.** — A similar space around the S. Pole (B), is described by the antarctic circle; and the same conditions are, at the same moment, repeated there, except inversely. While the arctic circle remains in the sunshine, independent of the earth's revolution, the antarctic circle remains in the shadow.

The regions within the arctic and antarctic circles are *the only parts of the globe's surface where the sun ever*

*remains 24 hours either above or below the horizon. And, remember, that, while, on the circle itself, the day, or the night, is never longer than 24 hours, it lengthens, as we advance from the circle to the pole, until, at the point of the pole itself, it has a duration of six months. Now what is the distinguishing feature of arctic circle? — antarctic circle? And what are the conditions there of day and night?**

(80.) **Tropic of Cancer.** — If the earth's axis were perpendicular to the ecliptic, the sun's center would always be vertical over the equator; but, as the axis leans $23^{\circ} 27' 26''$, from a perpendicular, toward the ecliptic—that depresses the equator $23^{\circ} 27' 26''$ below the ecliptic, and brings a corresponding point of the earth $23^{\circ} 27' 26''$ N. of the equator (21. June), under the perpendicular rays of the sun. A circle, supposed to be drawn at this point around the earth, is called the *tropic of Cancer*. This can best be seen in C. *The sun is never vertical over any point of the earth N. of this tropic*; and that is why the circle is drawn just there. When the N. hem. turns so far toward the sun that his center is vertical over this point, he seems to turn and go back again. Hence the word *tropic* (from the Greek word *trepein*, to turn). What is the distinguishing feature of the tropic of Cancer?

(81.) **Tropic of Capricorn.** — The tropic of Capricorn marks, (Pl. I. C. fig. 1) in the S. hem., the same phenomena, at the opposite period of the year. Fig. 3 shows the earth at our northern winter solstice. Instead of the N. hem., the S. hem. is turned, toward the sun, as far as it ever can be—far enough to bring the sun vertical over the tropic of Capricorn. *His rays are never vertical over any point S. of this tropic.*

* The teacher is here again reminded to put such questions, where not already found in the text.

Hence the spaces, between these two tropics, are the *only* spaces on the surface of the globe which ever receive the vertical rays of the sun. Name the distinguishing features of tropic of Capricorn.

(82.) **Sun's apparent semi-annual movement N. and S. between the tropics.** — Look at the summer solstice (Pl. I. C). There the sun is in the zenith of the people on tropic of Cancer. In our autumnal equinox (fig. 2), his center is perpendicular over the equator. At our winter solstice (fig. 3), his center is perpendicular over the tropic of Capricorn. At our vernal equinox (fig. 4), it is over the equator once more. At our summer solstice, it is directly over the tropic of Cancer again. Thus, to the people of the earth, the sun seems to come into the northern heavens as far as tropic of Cancer, then to pass S. as far as tropic of Capricorn, and thus to be, continually and forever, passing vertically over their heads north and south, between those two circles or tropics crossing the equator twice a year.

(83.) **Four seasons at equator.** — Take Pl. I. C. Suppose yourself on the equator, in that figure of the earth marked 1. (our summer solstice). We have here one of the equatorial winters. For, in this zone, there are two winters and two summers every year. The sun's center is as far away from the equator, on the N., as it ever can be. The tropic of Cancer marks the limit. The sun will now begin to turn back toward the equator. In three months his center will be exactly over the equator (2). That is one of the equatorial midsummers. From figs. 2 to 3, he will, after having crossed the equator, be passing S. of it. At 3, his center will be vertical, as far S. as it ever can be, on tropic of Capricorn. The equator, now, has its second annual winter. At 4., invisible in the Plate (supposed to be on the opposite side of the sun), the equator has its second midsummer.

At fig. 1, the sun has withdrawn as far N. again as tropic of Cancer. The equator has once more its winter. During the successive seasons, as will easily be understood by examining that point of the equator intersected by the shadow (fig. 1), day and night are of equal length.

Remark, also, the two midsummers, at equator, correspond to our two equinoctial points—while one midwinter corresponds to the northern midsummer; and the other midwinter to the southern midsummer. The winters of this equatorial region are marked by rain instead of cold.

(84.) **Four seasons at tropic of Cancer.** — Suppose yourself (Pl. I. C. Fig. 1) on tropic of Cancer, in Mexico for instance. It is midsummer, about 23. June. You have, on that day, the burning sun directly over your head. He does not, however, seem to move farther N. He seems to *stand still* a few days (except, of course, the apparent motion arising from the daily rotation of the earth). He then turns toward the S., rising every morning on a more southern parallel. The day and night cannot here be equal, as on the equator. The day is about 14 hours; the night, about 10. As the earth moves around to fig. 2, the day and night are equal again; because the sun has moved S. as far as the equator. At fig. 3, the sun rises as far S., as tropic of Capricorn. Your *night* is now 14 hours long, your *day* only 10.

(85.) **Four seasons at arctic circle.** — Place yourself at Behring Strait, on the arctic circle (Pl. I. D. fig. 1). Here, about 23. June, you can see the sun all night—that is during the whole diurnal rotation. You have a circle which does not turn away from the sun, at this point of the year, during 24 hours. Each day, however, that circle contracts. You have less sunshine every 24 hours. Thus your days shorten and your nights lengthen. At fig. 2, your day and night

are equal. At fig. 3, the season of fig. 1 is exactly reversed. During one diurnal revolution of the globe, you have, here, no view of the sun at all; but the circle of darkness begins to contract, just as the circle of light did at 1. Your day lengthens again till, at fig. 4, it is 12 hours, and it continues to lengthen, till, at fig. 1, your night, during a single revolution of the globe, ceases altogether.

(86.) **Four seasons at North Pole.** — Take your stand at the point called the N. Pole (D. 1). You have, here, the sun as high in the heavens as he ever can be. He wheels, or rather seems to wheel, without disappearing at all, in small circles around the N. Star; because the point of the earth, on which you stand, wheels in small circles around the pole, without being withdrawn from his rays. He has been shining, without interruption, since you left the point 4. He continues to shine, till you reach fig. 2 (that is six months); but wheels lower and lower toward the horizon till, at 2 (our autumnal equinox), his fiery globe disappears altogether, and you will not see him again for six months. He has passed S. of the equator. He has crossed the equator, and thus sunk beneath your line of vision. He has descended beneath your rational horizon (32). At 3, he is at farthest S. point — the tropic of Capricorn. The night circle around the N. Pole has reached its greatest circumference, because the sun is as far beneath your horizon as he ever can be. We call this circumference the *arctic circle*. The day after you leave 3, the shadow begins to contract. It grows smaller and smaller, till, at 4, it recedes from the point of the pole. You then catch, once more, a glimpse of the sun and do not lose sight of him again for six months.

Remark. The rising of the sun, after his prolonged absence, is a great event to the poor tribes of these dreary regions. The first sign of his gradual reappearance is hailed with extravagant joy, and his slow approach

watched with extraordinary interest. We may imagine also with what emotions they behold his burning orb slowly descend, and at last entirely disappear beneath their horizon.

(87.) **Five Zones.** — The four circles thus divide the surface of the globe into five *regions* or *zones*—the *north frigid zone*, the *north temperate zone*, the *torrid zone*, the *south temperate zone* and the *south frigid zone* (Pl. VIII. N.). Name these 5 zones and describe their limits.

(88.) **North Frigid Zone.** — The phenomena of this zone are (Pl. I. C.).

1. It is a circle, every part of which, at the summer solstice, has the sun above its horizon during one entire revolution of the earth on its axis.

2. At its central point (the pole), the sun does not set for six months.

3. At the intervening points, between the center and the circumference of the circle, the sun remains above the horizon from 6 months to 24 hours, according to the different parallels of latitude.

4. At the winter solstice, the conditions of day and night are diametrically reversed. The whole of its area has the sun beneath its horizon, during one entire revolution of the earth on its axis, and the length of the night increases from 24 hours to 6 months, as you approach from the circumference of the circle to the central point—the pole. Of course the seasons correspond to the conditions of day and night.

5. While the sun's rays are thus withdrawn in the winter, they fall so obliquely on this region, even in the summer, that, except for a very brief period, the heat and vegetation are feeble, and the frigid zone is thus, from intense cold, scarcely inhabitable by human beings. Name distinguishing features of the N. frigid zone.

(89.) **South Frigid Zone.** — The conditions of the N. frigid zone are exactly reproduced, except at opposite points of the year.

(90.) **Torrid Zone.** — 1. Some part of it always has the sun in its zenith.

2. Every part of it receives the sun's perpendicular rays twice a year. He seems to come N. till (our summer solstice) his center is in the zenith of places on the tropic of Cancer. He then turns and moves S., that is, he rises every day at a more southerly point than on the preceding day, until (our winter solstice) his center is in the zenith of places on the tropic of Capricorn, when he turns and begins to go back toward the N.

3. On the equator, and in a zone about 6° on each side of it, the day and the night are always of equal length, namely 12 hours. The winter cold, as in the four other zones, is unknown.

4. The sun never remains above, nor below, the horizon an entire revolution of the earth on its axis. Name distinguishing features of torrid zone.

(91.) **North Temperate Zone.** — 1. It has (unlike the frigid zones), never the sun above, nor below, the horizon during a revolution of the earth.

2. It has (unlike the torrid zone), never the sun's rays vertical over any part.

3. The length of day and night (except at equinoxes) is never equal (as on the equator), but far less unequal than within the polar circles. Name distinguishing features of N. temperate zone.

(92.) **South Temperate Zone.** — The same peculiarities, but at opposite period of the year. June, July, August, are the winter months, while December, January and February are the summer.

(93.) **Different length of day and night in different zones.** — A glance at the figures of the earth on Pl. I. will show that, on 21. June, the relative length of day and night must be different at every parallel of latitude, from arctic circle to antarctic circle. (Fig. F.) The arctic circle will have the longest day, namely 24 hours. The day will be shorter, and the night longer, on places in proportion as they are nearer to the antarctic circle. This condition of course will be exactly reversed at C. 3. Half way between 1 and 3, (that is, at the equinoctial points), the day and the night will be equal in length. At the different points of the earth's orbit, between the summer solstices again, these conditions will be reversed, and the relative length of day and night will change precisely as the earth moves forward from one of these points to the other. From the circumference of the arctic and antarctic circles to their centers (i. e. the poles), the length of the day, according to the parallel of latitude, will vary, from 24 hours to 6 months, with the earth's annual revolution, the phenomena being exactly reversed every six months.

(94.) **Table of different length of day and night,** — 23. June, on 20 different parallels of latitude.

On equator, and 6 degrees each side of it, day and night always 12 hours.

On parallel	16° 44'	the longest day	13	-
	30° 48'	- - -	14	-
	41° 24'	- - -	15	-
	49° 2'	- - -	16	-
	54° 31'	- - -	17	-
	58° 27'	- - -	18	-
	61° 19'	- - -	19	-
	63° 23'	- - -	20	-
	64° 50'	- - -	21	-
	65° 48'	- - -	22	-
	66° 21'	- - -	23	-
	67° 23'	- - -	1	month.

On parallel	69° 51'	the longest day	2 months.
	73° 40'	- - -	3 -
	78° 11'	- - -	4 -
	84° 5'	- - -	5 -
	90° 0'	- - -	6 -

You will understand this better by Pl. I. fig. F. where the six months day at the N. Pole, in our midsummer, and the six months night and winter at the S. Pole, in our midsummer, may be comprehended at a glance, with the variations, as to length, on the different intervening parallels.

(95.) **Morning—Noon—Afternoon—Night at New York.** — By the 8 figures of the earth (Pl. I), particularly from E to H, you see how the continents, oceans, etc., are situated, with regard to zones and climates; and how differently they are affected by the motions of the earth, as to the length of day and night, etc. Bear in mind that, in all these figures, the earth is represented at our *summer solstice*. Describe condition of N. hem. *Midsummer and longest day*. Describe S. hem. *Midwinter and shortest day*. At the point called N. Pole. *Six months day*. At the point called S. Pole. *Six months night*. Where is the sun's center? *Vertical over tropic of Cancer*. Describe condition of arctic circle. *It has the sun above the horizon 24 hours*. Antarctic circle? *Sun beneath the horizon 24 hours*.

As the globe revolves from west to east (E), the point, marked New York, has moved from the shadow into the light. At New York, therefore, in E, it is morning or forenoon. At F, it is noon. In G, New York is on the opposite side of the globe, and moving toward the shadow; it is therefore afternoon. In H, New York has passed into the shadow and nearly out of it again; it is therefore night, but not long before sunrise. When the diurnal movement shall carry New York to the limit of the shadow, the sun will rise. You see here, in H, that the sun rises earlier, at mid-

summer, to places on the same meridian, in proportion as they lie nearer the N. Pole, till the point of the arctic circle, after which the sun remains above the horizon the whole 24 hours. The sun, in H, is just rising over Hudson Str. which is on the same meridian as the Republic of Ecuador (S. America). But the sun will not rise, in the latter place, till 4 hours later. By the table of the different length of day and night (F); we perceive that New York has the sun about 15 hours above the horizon, on our longest summer day; of course, 15 hours beneath our horizon, on the longest winter night.

(96.) Why does the N. Pole always point to the North Star? — The attentive student will find little difficulty in understanding the previous lessons. He may, however, desire a more particular answer to one question. The earth moves annually in an immense ellipse around the sun and, at midsummer and midwinter (Pl. I. C.), occupies two positions about 200 million miles distant from each other. Its axis, at the same time, retains its parallelism—that is, as we have just seen, at every point of its orbit, remains parallel to itself at every other point of its orbit. How then can the N. Pole always point to the North Star, during its whole annual revolution around the sun? This phenomenon results from the stupendous distance of the North Star which is so amazing that the *whole solar system*, in comparison, dwindles to a mere *needle-point*. We have already (17 and 19) touched on the subject. In Pl. I. B., you will observe a small circle, little more than a dot, drawn in the line between the N. Pole and the North Star. That is intended to represent the comparatively insignificant space occupied by our solar system among the fixed stars. You must suppose the earth, revolving around the sun, *within that little circle*; you will not require any farther explanation, why the N. Pole always points to the North Star.

QUESTIONS UPON THE SEASONS.

(97.) There are, as we have seen four causes which co-operate to produce the seasons actually existing on our planet:

1. The inclination of the earth's axis to the plane of its orbit.

2. The annual movement of the earth around the sun.

3. While moving annually around the sun, the earth remains always in the same plane.

4. The axis retains its parallelism.

Now repeat the first of these causes. *The inclination of the earth's axis to the plane of its orbit.* How does that cause the seasons? Would there be *no seasons*, if the earth's axis were *not* inclined? Would the *sun* not be there and shine? Would there not be *heat and cold*? *There would be seasons.* What would be the condition of the globe, if the earth's axis were not inclined,—that is, if it were, we will say, *perpendicular* to the plane of its orbit? Take Pl. I. C. fig. 1. How would the axis then be situated with regard to the line of the shadow? *It would be parallel to it.* How would the equator lie with regard to the earth's orbit or ecliptic? *It would be parallel to it.* What season would it be in the torrid zone? *Midsummer.* In the two temperate zones? *Neither midsummer nor midwinter, but between the two—about the same temperature as our spring or autumn.* What in the frigid zone? Would it be midwinter or midsummer there? *It would be there also a season between the two.* We see, therefore, that there *would* be seasons, but different from our present seasons. As the axis would form a perpetual right angle with the ecliptic, the N. Pole would, of course, never be turned toward the sun, as in fig. 1., nor away from it, as in fig. 3. Midsummer and mid-

winter, therefore, would never exist in the frigid and temperate zones, nor anywhere else; but there would be an everlasting midsummer in the torrid zone. What would be the condition of the earth with regard to day and night? *Day and night would be always equal everywhere upon the earth's surface.* What is it then which causes our actual midsummer and midwinter N. and S. of the tropics? *The inclination of the earth's axis to the plane of its orbit.* We have observed that the principal result of the inclination of the earth's axis is our present midwinter and midsummer N. and S. of the tropics. What effect does this inclination have upon the torrid zone? *At present, the inclination of the axis causes the sun to pass from the tropic of Cancer to the tropic of Capricorn, and then from the tropic of Capricorn to the tropic of Cancer again, once every year; whereas, if the axis were perpendicular, the sun would be always in the zenith of the people on the equator.* To what extent is the axis inclined? *Twenty-three degrees, twenty-seven minutes, twenty-six seconds.* What angle (Pl. VIII. T. fig. c.) does the axis form with the perpendicular line of shadow? *Twenty-three degrees, twenty-seven minutes, twenty-six seconds.* What angle does the equator form with the ecliptic? *Twenty-three degrees, twenty-seven minutes, twenty-six seconds.* You say the axis leans $23^{\circ} 27' 26''$, from a perpendicular, toward the ecliptic — what angle does that perpendicular form with the ecliptic? *An angle of 90° or a quadrant (see Pl. VIII. T. fig. b).* Now if the perpendicular line of shadow form an angle of 90° with the ecliptic, state again, what angle the axis forms with the perpendicular? *Twenty-three degrees, twenty-seven minutes, twenty-six seconds.* Now state, what angle the axis forms with the ecliptic. Of course it will be 90° , less $23^{\circ} 27' 26''$; and as it is a somewhat slow process to deduct $23^{\circ} 27' 26''$ from 90° , we will give you the answer — $66^{\circ} 32' 34''$. Now state what is the angle formed by the axis with the ecliptic? *Sixty-six degrees, thirty-two minutes, thirty-four seconds.* If the axis were itself perpendicular to the ecliptic, it would

form a right angle—that is, an angle of 90° . As it leans $23^{\circ} 27' 26''$, from a perpendicular, toward the ecliptic, of course its angle with the ecliptic will be $23^{\circ} 27' 26''$ less than 90° *. Now supposing the axis to be always perpendicular to the ecliptic, how would the seasons be affected by the annual revolution of the earth around the sun? *Not at all.* There would be no succession of seasons. There would be no variety. But would there not be one slight change of temperature? (see note to 74 p. 32). *Yes, as the earth is, at one point of the year, 3 million miles nearer the sun than at the opposite point, the temperature would slightly rise everywhere on the earth's surface at one period of the year.* The inclination of the earth's axis, therefore, explains why, in fig. 1. of C., it is summer in the N. hem. and winter in the S. hem. But another cause is required to explain the *succession* of the seasons. For if the earth remain stationary at fig. 1, the seasons would remain stationary also. If the sun revolved around the earth in the plane of the ecliptic, as Ptolemy thought, there would, indeed, be a succession of seasons. But the evidences of the fixity of the sun, as the center of the solar system, are too overwhelming to be doubted; the annual movement of the earth is demonstrated by unanswerable arguments. We may, therefore, take the earth's annual movement as a second cause. But suppose the earth, while moving annually around the sun, were frequently to rise *above* that orb (so to speak); and again to sink *beneath* it, without keeping in an unchanged level—what would be the effect of *that* on our seasons? *A proportionate irregularity of the seasons.* Yes, if our planet were to sink *below* the sun, we should have the sun of course *above* the N. Pole—tropical heat in the arctic circle—ice and snow on the equator—in the antarctic circle, an increased intensity of cold and darkness. What, therefore, is the *third* cause of

* The teacher will perceive that this is not a mere repetition.

the regularity with which the seasons follow each other? *The earth always moves in the same plane.* Yes, the earth's center never rises *above*, nor falls *below*, that line (Pl. I. C) representing the ecliptic. Lastly. Suppose the earth's axis should sway backward and forward, like the masts of a rolling ship at sea—what would be the effect of *that* on our seasons? *The effect would be, an irregularity, similar to that which would result, if the planet were to pass above or beneath the plane of the ecliptic.* The seasons would fluctuate in proportion to the vacillation of the axis. The N. Pole would sometimes bend down toward the ecliptic, presenting the N. hem. more broadly to the sun; sometimes it would turn away from the sun, into far more intense cold and darkness than our polar regions have ever experienced. Equatorial heat and polar cold would suddenly displace each other, according as the huge globe reeled to and fro. God has ordained it otherwise. He who "hath meted out heaven with the span", hath said: "*While the earth remaineth, seed-time and harvest, and cold and heat, and summer and winter, and day and night, shall not cease*". Not only the axis is inclined so many degrees, minutes and seconds, to the plane of the orbit, but, during its entire annual journey around the sun, it keeps invariably its axis at the same angle with that plane. How do you describe this circumstance, in other words. *The earth's axis always retains its parallelism* (as in Pl. VIII. H). What do you mean by the axis retaining its parallelism? I mean that *the axis, at every point of its orbit, remains parallel to itself, at every other point of its orbit.* Now name the four circumstances which explain the seasons, and the regularity with which they succeed each other (p. 46).

(98.) *Remark.* 1. Bear in mind, we repeat, that this sketch of Astronomy has been strictly confined to those points required by the student of Geography. For such as desire to study Astronomy farther, the writer has prepared a third volume (6), designed to give

an outline view of that science, in such a simple form, as will be intelligible to all who read it attentively, in connection with its accompanying plates.

2. It may be added, in conclusion, that the term "*parallelism of the earth's axis*", like many others, must be taken *relatively*. During 12,000 years, there is a slow departure from this absolute *parallelism*, so that, instead of the N. Star, the brilliant star Vega (in Lyra) will, at the end of that period, be our polar star. This, and other movements, of which we here say nothing, take place with such perfect regularity, and according to such fixed laws, that we can calculate their operations with certainty. Thus we know that the N. Pole of the earth, in about 26,000 years, will, once more, as at present, be directed to the N. Star.—Again: The constellations, from time immemorial, have remained in the same relative position, so that the orbs composing them may well be called *fixed* stars. But they are fixed only temporarily. During the next two or three million years, each star will float far away into a remote point of space. The groups, called constellations, will separate. The seven stars of the Great Bear, those for so many ages burning in Taurus (Pl. VIII. A), Alcyone, Aldebaran, and others, will recede and be lost to each other. The "bands of Orion" will be "loosened".—The starry heavens will present an entirely different appearance. But, as the whole universe seems a machine, regularly framed as a clock, (although performing its movements on a scale so stupendous that the time, since the human race first appeared on the earth, is too short to afford more than some indications of them,) we may presume that all these changes are equally premeditated, and regulated, by that divine Power who created "the heavens and the earth and all the host of them."

PART II.

PHYSICAL OR NATURAL GEOGRAPHY.

NINETEEN LAND AND WATER DIVISIONS OF THE GLOBE.

(99.) **Prefatory Observations.** — By the aid of figures A, B, C, D (Pl. I), we have endeavored to acquire some idea of ASTRONOMICAL GEOGRAPHY. The rest of the pictures bring us nearer to the earth, and enable us to examine several striking objects upon its surface. We here commence the study of PHYSICAL or NATURAL GEOGRAPHY. The 8 circular views of the earth are called *Planispheres*, because each one represents a *sphere* upon a flat surface or a *plane*. They are also called *Hemispheres*.

WESTERN HEMISPHERE. FIG. E. — N. Pole is at top; S. Pole, at bottom; equator, equi-distant between them. Your eye is here supposed to be in *plane* of the equator.

EASTERN HEMISPHERE. FIG. G. — Poles and equator seen from same stand-point, as in previous fig. (E), only the earth has made a half revolution.

NORTHERN HEMISPHERE. FIG. I. — Here we have changed our position. We are *over* the N. Pole — in its zenith. Hence we look down on that half of our planet, N. of equator. The equator, therefore,

forms the circumference of our circular view—N. Pole, its center. As the earth revolves, the point, called N. Pole, will remain stationary and the objects of N. hem. will move around in circles, without disappearing.

SOUTHERN HEMISPHERE. FIG. K. — Same conditions as in fig. I, except that, instead of being over *North Pole*, we have moved around to a point exactly in zenith of *South Pole*. We are looking down upon that half of the globe, *south* of equator. The equator is the circumference of our circular view—S. Pole, its center. With earth's revolution, the objects will move in circles around the point called S. Pole. Remark, we were supposed to look *down* upon the earth in fig. I. But, opposite *South Pole* (K), should we not look *up* at the earth? How can we look *down* upon it? Because, when we break away from our childish ideas of *up* and *down*, we discover that, in reality, there is *no such thing* except *relatively*. *Down* is toward the center of the earth; *up*, away from the center. We look equally *down*, toward the earth, when our Light-Car is over N. Pole—over S. Pole—over equator—over either tropic—or over any other point of the globe's surface.

LAND HEMISPHERE. FIG. L. — That side of globe which contains greatest mass of land.

WATER HEMISPHERE. FIG. M. — Greatest mass of water.

PACIFIC HEMISPHERE. FIG. F. — Best general view of Pacific.

ATLANTIC HEMISPHERE. FIG. H. — Complete view of Atlantic.

We will now consider these figures more particularly.

(100.) **Western—Eastern Hemispheres.** — Let us suppose ourselves in our Light-Car, sailing *through free space*, and sufficiently near the earth to distinguish oceans, continents, etc.; with power to go where we like—to *stop* and remain *stationary* when we

like—to pass *above, around, below* the earth, in every direction, and to view it on all sides. We move to that point of space where we behold the earth, as in fig. E (Pl. I). It presents the **WESTERN HEMISPHERE**. Now we move to another side of the globe (G), exactly opposite Western Hemisphere. There, we view **EASTERN HEMISPHERE**. These two hemispheres, together, show every part of the earth's surface.

(101.) **Four Continents.** — There are four continents. In W. Hemisphere (E), the immense broken fragment, extending nearly from N. Pole to S. Pole, is called America, Western Continent or New World. In E. Hemisphere (G), the principal landmass is the Eastern Continent or Old World. The smaller portion of land, S. E. of E. Continent, is Australia, generally numbered among continents, sometimes called an *island*. The unexplored land and ice around S. Pole (K), although little known, is usually termed Antarctic Continent. You will get a better idea of Antarctic Continent, by consulting the proper figures, E to M (also Pl. II). Point out and name four continents. What is a continent? (Read 121).

(102.) **Subdivisions of Continents.** — The W. Continent (E) is subdivided into North America and South America; E. Continent (G) into Europe, Asia and Africa.

(103.) *Remark.* 1. The Ural Mountains form part of the boundary between Europe and Asia.

2. Geographers sometimes consider the world in eight divisions: — N. America — S. America — Europe — Asia — Africa — Australia — Antarctic Continent — Oceania — the latter subdivided (Pl. I. G and F) into three island-groups: — Malaysia — Australasia (including Australia) — Polynesia.

(104.) **Oceania.** — The great *island-world* (F and G) — consists of an immense number of islands extending

north, east and south of Australia, between W. and E. Continents, over nearly whole Pacific. Pl. II gives a view of Oceania, on a larger scale, with its three subdivisions. You may here also consult Pl. IV.

(105.) **Six Oceans.** — Seen from some points (Pl. I. K. M), the planet we inhabit appears a vast *water-globe*. One universal ocean covers about two-thirds of its surface. Several large, broken landmasses, and a great number of islands, are distributed in it and divide it into different parts, bearing different names, as, if different oceans, namely: Pacific Ocean (fig. F)—Atlantic Ocean (fig. H)—Indian Ocean (fig. G)—Great Southern Ocean (fig. K)—Arctic Ocean (fig. L)—Antarctic Ocean (fig. K). —Point out Pacific on the planispheres. Now Atlantic. Indian Ocean. Great Southern Ocean. Arctic Ocean. Antarctic Ocean. How many oceans are there? *Six*. Name them. What is an ocean? (Read 153).

(106.) **Great Southern Ocean.** — Point out Great Southern Ocean on figures of Pl. I. — Some geographers have considered the Pacific, Atlantic and Indian Oceans to extend down to antarctic circle (F, G, H, K), and given the names, Southern Pacific, Southern Atlantic, etc. to those portions reaching below C. Horn (S. America), C. of Good Hope (Africa) and Australia. Others have made the Antarctic Ocean reach up to C. Horn, C. of Good Hope and the whole S. coast of Australia. Point out these? In 1845, the Geographical Society of London recommended that the southern limits of the Pacific, Atlantic and Indian Oceans, should be the antarctic circle. (E, F, G, K, M). This recommendation has not been generally adopted. The navigator, in the neighborhood of the antarctic circle, does not enter upon his log-book (sea-journal) what *ocean* he is in, but only his latitude and longitude; for what *ocean is* he in, on the meridian of C. Horn and antarctic coast? In order more clearly

to define an area of the great universal ocean, distinguished from the rest by a peculiarity, as striking as any marking the different zones, we shall, as some others have done, give the name of Great Southern Ocean to all that water which (K) lies N. of antarctic circle, and S. of a line drawn from C. Horn to C. of Good Hope, thence to S. point of Australia round to C. Horn again. In N. hem. (I), it is not possible for a ship to sail in *one continued circle*, due E. or W., around the earth; because its course would be interrupted by land, (except, possibly, a small, unexplored area encircling the N. Pole (I. L), supposed by many to be blocked up with eternal ice); but, in the Southern Ocean (K), a ship might sail, due E. or W., *in a circle*, around the globe, and come back, without interruption from land, to the point whence it started.

Remark. The words, "Great Southern Ocean", on the planispheres of the earth (Pl. I), have the appearance of being placed on the map negligently. The shape of the ocean, however, requires that they should be so inscribed, in order to show the very irregular northern limits: for instance (fig. H), from C. Horn to C. of Good Hope.

(107.) **Continents and Oceans in one unbroken outline.** — Take Pl. IV.—a different kind of map, called *Mercator's Projection* (Mer-cā'-tor)—more particularly explained hereafter. The advantage of it is that we have, *at a glance*, all the different continents and oceans—an unbroken view of Great Southern Ocean, bounded on the N. (106) by a line reaching from C. Horn to C. of Good Hope, thence, touching southern point of Australia, to C. Horn again—and the entire limits of Oceania. The antarctic circle, forming the southern limit of the map, cuts off the Antarctic Ocean and part of the so called Antarctic Continent. How many objects have we indicated on the surface of the earth. *Nineteen.* How many continents? *Four.* How many subdivisions of con-

tinents? *Five*. What others? *Oceania (with its three subdivisions) and six oceans*. Name, and point out, on Plates I and IV, each of these 19 objects.

(108.) **Nineteen chief objects on the globe's surface.** — *America, Western Continent or New World;—Eastern Continent or Old World;—Australia;—Antarctic Continent;—North America;—South America;—Europe;—Asia;—Africa;—Oceania, divided into Malaysia, Australasia (including Australia), Polynesia;—Pacific Ocean;—Atlantic Ocean;—Indian Ocean;—Southern Ocean;—Arctic Ocean;—Antarctic Ocean.*

(109.) **Light-Car in plane of equator, over W. Hemisphere.** — Let us now, in our imaginary Light-Car (100), move around the earth, in every direction, as we have seen a swallow fly over and around a great church; only with this difference—our Light-Car will take us *under*, as well as over. We bring our Car to a stop, and *remain stationary*, opposite fig. E, over that point where equator is intersected by the middle meridian. What hemisphere? *America, Western Continent or New World*. Name nineteen chief objects (108). Which objects are here visible, partly or wholly?—*America, Western Continent or New World—N. America—S. America,—small point of Asia—Atlantic—Pacific, with Oceania—Arctic and Antarctic Oceans*. Which part of Oceania (F)? *Polynesia and Australasia*. Name those of the nineteen objects *not* visible in E. Where are they? *Opposite side of the globe*. In which figure? *In fig. G*.

Remark. There are three oceans and one continent, namely: Arctic, Antarctic and Southern Oceans, and Antarctic Continent: which extend around on both sides of the globe. We will not name those four objects in replying to the following questions of sect. 109.

What lies E. of America? *Atlantic*. E. of Atlantic? *Europe and Africa*. E. of Europe and

Africa? *Asia and Indian Ocean*. E. of Asia and Indian Ocean? *Pacific with Oceania*, divided into *Malaysia*, *Australasia* (including *Australia*), and *Polynesia*. E. of Pacific? *America*. Now go eastward around the earth, from America, and name those objects. Now go westward around the earth, from America, and name those same objects. *Pacific with Oceania*, etc.—*Asia and Indian Ocean*—*Europe*—*Africa*—*Atlantic*—*America* again. Repeat these backward and forward, a number of times. Point out circles on fig. E. Which of the nineteen objects lie within arctic circle?—Between arctic circle and tropic of Cancer?—Between two tropics?—Between tropic of Capricorn and antarctic circle?—Within antarctic circle?

(110.) **Light-Car over Pacific Hemisphere**

(F).—Remember, we keep our Light-Car *stationary*, at the point which we chose, over fig. E. We remain stationary, but the *earth* slowly revolves, from W. to E.; so that, in a few hours, we should have, beneath us, fig. F, and we should be in the *zenith* of that point, where the equator intersects the middle meridian. What hemisphere? Why so called? Name again nineteen objects. Which are here visible, wholly or in part? *America*, *W. Continent or New World*—*Eastern Continent or Old World*—*Australia*—*Antarctic Continent*—*N. America*—*S. America*—*Asia*—*Oceania*, divided into *Malaysia*, *Australasia* (including *Australia*), and *Polynesia*—*Pacific*—*Atlantic* (a very small part)—*Southern Ocean and Antarctic Ocean*. Name those of the nineteen objects not visible here. Point out circles. What objects lie within antarctic circle?—Between arctic circle and tropic of Cancer?—Within the tropics?—Between tropic of Capricorn and antarctic circle?—Within antarctic circle?

(111.) **Light-Car over Eastern Hemisphere**
 (G). — Name nineteen objects. Name those visible, wholly or in part, in E. hemisphere. *Eastern Continent or Old World—Australia—Antarctic Continent—Europe—Asia—Africa—Oceania, divided into Malaysia, Australasia (including Australia), and Polynesia—Pacific—Atlantic—Indian Ocean—Great Southern Ocean—Arctic—Antarctic Oceans.* Which of the nineteen objects are wholly or in part, on opposite side of G? Describe their positions with regard to the circles.

(112.) **Light-Car over Atlantic Hemisphere**
 (H). — Name nineteen objects. Name those visible in H. *America, W. Continent or New World—E. Continent or Old World—Antarctic Continent—N. America—S. America—Europe—Asia—Africa—Pacific—Atlantic—Indian Ocean—Southern Ocean—Arctic—Antarctic Oceans.* Describe positions of these objects with regard to the circles.

(113.) **Light-Car over Northern Hemisphere**
 (fig. I). — If we remain in the position thus far held, over E—that is in plane of equator—the earth would continue to revolve beneath us, and the four hemispheres E, F, G, H, would follow each other in a perpetual succession; but we should never, at one glance, obtain a complete view, either of N. or S. hemisphere. In order to do this,—(we will first seek to obtain a complete view of the N. hemisphere)—we must move our Light-Car to a quite different point of space, and greatly change our position with regard to the earth. We must quit plane of equator, where it appears a line, go N., and arrest our Car at a point, just *one quarter* way around the globe, where we shall have the arctic circle fully in front of us—and where the equator will, of course, appear *a circle*. We will direct our Light-Car, first, to a point in the zenith of

the N. Pole. Over which figure are we now? *Fig. I.* Where is the N. Star? *In our zenith.* The N. Pole? *In our nadir.* Look at B. Where must our Light-Car stand, in that figure, to afford the view of the earth in fig. I? *It must stand at the point marked by the letter W, on the line between N. Pole and N. Star.* Name nineteen objects, visible wholly or in part. Begin at America and go eastward. *America—Atlantic—Europe—Africa—Asia—Indian Ocean—Pacific—Oceania.* What parts of Oceania (F)? *Parts of Malaysia and Polynesia.* Name same objects going westward. Point out N. Pole—arctic circle—tropic of Cancer—equator—tropic of Capricorn. Where is tropic of Capricorn? *On the other side of the globe, exactly opposite tropic of Cancer.* Where is antarctic circle? What other objects lie on opposite side of globe (K)? What four objects in fig. I appear entirely? Which way does the earth revolve? *From W. to E.* In what direction would America move in fig. I? *Toward top or bottom of the map? Toward top of the map and so around.* Yes, it would go in a direction contrary to that in which the hands of a clock move. All the objects would move, in that direction, around the N. Pole, in circles, more or less large, according to their distance. If our Light-Car remain always stationary, in its present point, should we see any other hemisphere? *No.* Suppose we desire to examine the S. hem., as we have now examined the N. hem., where must we go? *We must move just half way around the globe, to a point of space, on the other side of S. hem.—exactly corresponding to that which, in fig. I, we occupy over N. hemisphere.*

(114.) **Light-Car over Southern Hemisphere (K).** — Where is N. Star in K? — *On opposite side of heavens, over N. Pole.* Where should we stand,

in B, in order to see the earth as in K? *At point marked by letter Z. Point out S. Pole and circles. Name objects visible, wholly or in part. Begin with America and go east. — S. America — Atlantic — Africa — Indian Ocean — Pacific with Oceania. Which subdivisions of Oceania (F)? Australasia including Australia) — parts of Malaysia and Polynesia. — Which way do objects move, when we stand opposite S. Pole? In the direction of the hands of a clock.*

(115.) **The terms East and West, in free space.** — We have seen (113) that, to an eye above N. hem. (Fig. I), objects, moving, with the earth's daily rotation, *eastward*, move in a direction *contrary* to that of the hands of a clock; whereas, to an eye above S. hem. (Fig. K), objects move *with* the hands of a clock — that is, in the *same direction*. Yet, as the earth's daily motion is always from *West* to *East*, the objects on it can never change their direction. This is to be explained as follows. There is no such thing as *East* or *West* in infinite space. The terms are *relative* — *invented* by the inhabitants of the earth. That part of our horizon, in which *the sun rises*, we call the *East*. He rises in the *East*, goes westward and sets in the *West*. If the sun's apparent motion, then, be *from E. to W.*, the earth's real, *contrary* motion, on its axis, must be from *W. to E.* The earth's annual rotation, around the sun, is said to be from *W. to E.*, because it is in the same direction as its rotation on its axis. Again, we say, all the planets revolve, from *W. to E.*, around the sun, because they all revolve around him in the same direction as the earth does. If we take our position opposite the S. Pole, the movements of the planets around the sun, would all be in the direction of the hands of a clock. They would revolve on their axes, in the same direction. When, therefore, we place ourselves *opposite S. Pole*, the term, from *West to East*, means, in the same direction as that of the

hands of a clock. Now look at K. How do the objects move, in that figure of the revolving earth? *They move in the same direction as the hands of a clock.* If we take, therefore, our position *opposite S. Pole* of the earth, we shall see our planet move from West to East, on its axis, and that will be in the same direction as the hands of a clock. If we recede far enough to obtain a full view of the *entire solar system* (Pl. VIII. B), we should see them all pursuing their orbits, around the sun, in the direction of the hands of a clock, from West to East.* When, therefore, we speak of these motions, as being like that of the hands of a clock, we suppose ourselves on *south side of solar system*—that is, opposite S. Pole of earth, of sun and all the planets. If we go to opposite side of solar system (i. e. the north side), the motions, of course, would be contrary to that of the hands of a clock. To a person standing *behind* a transparent clock, the movement of the hands would be *reversed*. That is the reason why the direction of the revolving objects, in fig. I, is the *reverse* of those in K. Which way does the earth move in C? Neither with nor contrary to the hands of a clock, as we are neither over N. nor S. hemisphere. But in D, where we look down upon the *northern* hemisphere, we see a direction contrary to that of the hands of a clock. Thus it depends on our *point of view*. And however these different movements may appear in contrary directions, they are in fact always in the same direction, — i. e. from West to East, and, to a person opposite S. Pole, would always appear the same as that of the hands of a clock.

* In the diagram (Pl. VIII. B), the planets are represented as moving *contrary* to the direction of the hands of a clock. Why? Because we are there supposed to be looking down on the *northern* hemispheres. You have only to turn the transparent sheet toward a window; you will then be opposite their *southern* hemispheres. Then their motions will be in the direction of the hands of a clock.

(116.) **Light-Car over Land Hemisphere (L).** — We now move to that point whence we behold, at a glance, the greatest mass of land. Name objects visible. Begin at America going eastward. Repeat them westward. Name objects *not* visible (M.) Point out circles. Which way does the earth revolve in L? As the hands of a clock or in a contrary direction? *In a contrary direction.* Why? *Because, viewed from the north side of the globe, instead of the south side.* Where is the N. Star, in L? *Behind our head, but not exactly over it.*

(117.) **Light-Car over Water Hemisphere (M).** — Name objects visible. — Objects not visible. Point out circles. Which way is the rotation, compared with the hands of a clock. *In the same direction.* Why? *Because we are opposite S. hem.*

Remark. 1. London (L) lies almost exactly in the central point of the Land Hemisphere; while New Zealand (M), a British possession, lies nearly in the central point of the Water Hemisphere.

2. We know little or nothing of arctic and antarctic regions. They have resisted all man's efforts to penetrate into their awful solitudes. It is not probable that any human being has ever visited those points of our globe's surface called the poles. If the climate were not an insurmountable obstacle—if a mild perpetual summer could displace those frozen winters with their eternal ice-masses, we should be surprised to see how near, in reality, are Europe, Asia and N. America (L); how those coasts, now frequented only by the bear, the walruss, the seal, and legions of other animals and birds, would be crossed by lines of rapidly going steamers, or perhaps railroads—so that points of the globe, at present, for all purposes of intercommunication, the most remote from each other, (as, for instance, Behring Str. and Scotland (L)—C. Horn and

Australia, etc. (K)—would be brought together, as Italy and England—or New York and Cuba.

(118). **Boundaries of continents and oceans.** — Examine these boundaries on each of the proper figures, as well as on the one indicated.

Bound Western Continent (E). — N. by Arctic Ocean; E. by Atlantic; S. by Atlantic, Great Southern Ocean and Pacific; W. by Pacific, Behring Str., Asia and Arctic Ocean.

Eastern Continent (G). — N. by Arctic Ocean; E. by Behring Str., N. America, Pacific and Indian Oceans; S. by Pacific, Malaysia, Indian, Great Southern and Atlantic Oceans; W. by Atlantic and Arctic.

Remark — the whole of E. Continent is not given on E. hemisphere; the N. E. part of Asia stretches over into W. hemisphere and nearly joins the N. W. part of N. America, from which it is separated by Behring Strait (E. F. I. L).

Australia (G). — N. by Pacific and part of Oceania; E. by Pacific and part of Oceania; S. by Great Southern Ocean; W. by Indian Ocean.

Antarctic Continent (K). — N. E. and W. by Antarctic and Great Southern Oceans. It has properly speaking no southern boundaries—except S. Pole.

Remark. *The Antarctic Continent*—has been supposed to form an irregular, six-sided figure, 3,000 miles long and 2,000 broad—about the size of United States. A volcano, EREBUS, was in eruption when first discovered. Land seemed to rise 3,000 feet high in the interior. Perpendicular walls of ice on the coast sometimes reached an elevation of 200 feet. The figures, K. M (Pl. I), give its form, as far as known, extending into both hemispheres. Remark, however, there is no proof that it really is one solid body of land, or even large islands, or island-chains, or groups. A continuous coast has not been discovered; and no exploration of the interior effected. Some of the land, reported by Wilkes (1839), has since been freely trav-

ersed by Ross in the ships *Erebus* and *Terror*. The latest and best authorities rather incline to the opinion that it consists of a few islands, locked together by a frozen ocean; and, remember, the antarctic region is colder than the corresponding space of N. Hemisphere (74).

North America (E). — N. by Arctic Ocean; E. by Arctic and Atlantic; S. by Atlantic and Pacific; W. by Pacific, Behring Str., separating from Asia and Arctic Ocean.

South America (E). — N. and E. by Atlantic; S. by Atlantic, Great Southern Ocean and Pacific; W. by Pacific and a small part of N. America.

Europe (G). — N. by Atlantic and Arctic; E. by Asia; S. by Asia and Africa; W. by Atlantic and Arctic.

Asia (G). — N. by Arctic; E. by Behring Str., separating from N. America, and by Pacific; S. by Pacific, Malaysia, Indian Ocean and Africa; W. by Africa, Europe and Antarctic.

Africa (G. H). — N. by Atlantic, Europe and Asia; E. by Asia and Indian Ocean; S. by Indian, Great Southern and Atlantic Oceans; W. by Atlantic.

Pacific (F). — N. by Asia, Behring Str. and America; E. by N. and S. America; S. by Great Southern Ocean and Australia; W. by Australia, part of Oceania, Indian Ocean and Asia.

Atlantic (H). — N. by S. America, N. America, Arctic Ocean, Africa; E. by Europe and Africa; S. by Great Southern Ocean and S. America; W. by S. and N. America.

Indian Ocean (G). — N. by Africa and Asia; E. by Pacific, Malaysia and Australasia; S. by Great Southern Ocean; W. by Africa and Asia.

Great Southern Ocean (K). — It is bounded only on the North and South. N. by S. America, Atlantic, Africa, Indian Ocean, Australia and Pacific Ocean; S. by Antarctic Continent and Ocean.

Arctic Ocean (I). — The water within arctic circle

is called *Arctic Ocean*. If the area of the whole circle be water, of which we have no proof, how is it bounded? N. by N. Pole, which is also its center; S. by N. America, Atlantic, Europe, Asia and Pacific, to which it is united by Behring Str.

Antarctic Ocean (K). — We can only say it is bounded N. everywhere by Great Southern Ocean, and S. E. or W. by what is called *Antarctic Continent*.

EARTH SEEN FROM MOON.

(119.) Suppose we now make an imaginary journey to our nearest neighbor among the heavenly bodies — the moon; (although, probably, no human being could exist there). Distance, about 200,000 miles; — by railroad (sec. 16), 8 months; — by Light-Car, *one second*. Fancy that, (an exception to all other mortals,) we have *reached the moon*. We anchor our Car upon some broken plateau, surrounded by shattered cliffs. It is one of her long nights (two of our weeks). The most prominent object, in the starry concave above our heads, is an immense, magnificent moon, 14 times larger than the full moon appears to us. That is our earth. Contrasted with the dark sky, its broad, illuminated disk offers a spectacle of unsurpassable interest and splendor. The continents and oceans are distinctly visible, (when the dense vapor which loads our gross atmosphere permits a clear view). The circles of snow and ice, under which the polar regions lie perpetually buried, shine with white, dazzling lustre. That around the S. Pole, is the larger (74). The landmasses are brighter than the oceans, because land reflects, and water absorbs, light. The continents are spotted, here and there, with clouds — mountain-ranges and shadows — vallies — seas — deserts — table-lands — glaciers — primeval forests, (those of N. America, Brazil, etc.). With our telescope, we fancy we descry faint indications of the larger cities. While we gaze, one edge of

the luminous orb darkens; a black, circular shadow moves, for some hours, across its disk, and gradually passes off at the opposite edge. That is the shadow of the moon itself. The countries of the earth, over which it passes, have an *eclipse of the sun*.

Western Hemisphere. — Our first view is (let us say) the W. hem. (fig. E).^{*} As we contemplate it, with wonder and delight, we become aware that the spots are not stationary. They move very slowly along the disk, from W. to E. The mighty globe is majestically *revolving* on its axis. The Atlantic gradually disappears. America moves toward the eastern edge. S. America speedily passes beyond the edge and vanishes (F). The Pacific (with Oceania) comes more and more into view; until, in about six hours, we have before us the:

Pacific Hemisphere. — Here (F) the globe has turned *one quarter* around. We see part of W. hem. and part of E. hem. As the movement is scarcely perceptible, we have ample time to study the objects. This side of the earth—the Pacific hemisphere—affords an unbroken view of that vast waste of water in all its immensity, washing the coasts of Asia, Australia and America and reaching nearly from pole to pole, (for what we call the Great Southern Ocean, however properly designated by a name of its own, is still a continuation of Atlantic, Pacific, and Indian Oceans). While we gaze, the objects almost imperceptibly change their positions. N. America, in a few hours, and, after it, the principal part of the Pacific, advance beyond the eastern edge and disappear. Australia moves forward on its way around to the other side of the sphere (as in G). That subdivision of Oceania, called Malaysia, in 12 hours, passes from western to eastern edge. Behring Str.

^{*} The figures E, F, G, H, with their circles and names, are of course, not intended to represent the supposed appearance of the earth, seen from the moon. But, as they are successive hemispheres brought into view by four periods of one revolution, the pupil will find it agreeable to use them during the following description.

vanishes over north-eastern limit, till, in about six hours more, the retreating objects are succeeded by whole E. Continent and Indian Ocean.* They glide along with no greater celerity than the hour-hand of a clock.

Eastern Hemisphere (G). — The stupendous globe has now made exactly a half revolution. It has turned W. hem. completely away and brought E. hem. into full view. Slowly advancing, by and by, Asia and Australia follow the remnant of Pacific out of sight. Europe and Africa creep forward toward the eastern rim (as in H); till yet other portions of the globe's surface come round and the:

Atlantic Hemisphere (H) — now lies broadly before us. The entire Atlantic, with its vast, broken coasts, has glided into the center of the disk, revealing its immense form, somewhat in the shape of the letter S. N. and S. America slowly project forward their huge shattered angles, followed by the deeply indented gulfs of N. America; while the Pacific, which only an hour or two before, sank beneath the eastern edge, already re-appears on the western side.

Remarks. Has the earth yet completed a revolution? No. For that, it requires about six hours more. It would then present to us the W. hemisphere again (as in E), and so, forever and ever, it accomplishes its wonderful revolutions (24); every place returning to a given meridian in precisely 23 hours, 56 minutes, 4 seconds and nine one hundredths of a second — counting from that hundredth part of a second on which it left it. To the inhabitants of the moon, if there were any, it would perform the office of a clock far better than any machine made by human hand.

We may, at our ease, contemplate this phenomenon; for the glorious orb will never *set*, as the moon

* The hemispheres F and G do not absolutely correspond to the period of six hours. The slight deviation was expedient in order to present unbroken outlines of the Pacific and Atlantic.

does to us. It remains stationary in its place; because the moon itself revolves on its axis, only once a month, and, in such a way, as to keep the *same side always turned toward the earth*. But, although the stupendous orb never sets, a person, in the moon, would see it pass through the same monthly phases, as the moon does to us. Sometimes, it would float in the heavens, a slender crescent; sometimes, a half moon; and sometimes, the mighty globe would turn broadly toward him its entire, illuminated hemisphere. These varying phases are caused by the monthly revolution of the moon around the earth, which brings her sometimes between the earth and the sun (when she has the earth as a full moon)—sometimes, to a point, where the earth is between the sun and her (then she sees the earth, if at all, as a crescent). Remark, the earth, as a half moon (E to M), would not be all visible, as in the figures. The *night-half* would entirely disappear. Along the broken edge, would be, at times, distinguished the illuminated peaks of the Andes, Alps, etc.

DEFINITIONS OF LAND DIVISIONS.

(120.) *Remark.* — It is not expected that every younger student will here acquire a very exact idea of the objects treated in the following definitions. They are now merely to be read over as a *preparation*; each pupil reading, aloud, one at a time. They will be hereafter again referred to, and read over more *understandingly*, at the proper stages of the lessons, and in connection with *examples*.

(121.) *Continent.* — A term applied to the four largest landmasses of the earth. The word is often used by geographical writers, when speaking of smaller land divisions; as, Continent of N. America; Continent of S. America; Continent of Europe; Continent of Asia; Continent of Africa.

(122.) *Island.* — A portion of land, smaller than a continent, entirely surrounded by water.

(123.) **Island Chain.** — Islands ranged in a line, whether straight or curved, are termed a chain. Such frequently connect a group with the mainland; or promontories or peninsulas, with corresponding portions of the opposite coast.

(124.) **Peninsula.** — Land almost surrounded by water.

(125.) **Key.** — Sometimes Cay (from the Spanish *cayo*, an islet), a ledge or lay of rocks near the surface of the water; or a chain of low sandy islands, reefs and sandbanks, sometimes of coral formation, very dangerous to the navigator.

(126.) **Isthmus.** — A narrow neck of land joining landmasses.

(127.) **Coast or shore.** — That part of land which borders on the sea.

(128.) **Cape.** — The extreme point of a portion of land stretching into the sea.

(129.) **Promontory.** — A high point of land or rock projecting into the sea. It differs from a *cape* in denoting *highland*. Every promontory therefore is a cape, but every cape is not a promontory.

(130.) **Mountain.** — A mass of earth or rock greatly elevated above the surrounding country.

(131.) **Mountain-range—ridge or chain.** — A term applied to a number of mountains, more or less united at the base, and having the same direction.

(132.) **Mountain-system.** — This term has two meanings: first, a mass of mountains elevated at the same geological period; as, the Pacific Range, the Himalaya and Ural Mountains. The Alps and Apalachian (or Alleghany) Mountains, on the contrary, were thrown up, by different plutonic actions, at different periods. Secondly, the term

"mountain-system" is applied in Geography to a number of mountain-chains grouped together.

(133.) **Peak.** — An elevated mountain, isolated and of difficult access, the summit of which, seen from a distance, appears pointed. The term is also applied to the most elevated summits of a mountain-range. *Crest* is a general term for the highest part of a mountain.

(134.) **Volcano.** — An opening in the surface of the earth, or in a mountain, which casts out fire, smoke, ashes, lava and other substances.

(135.) **Mountain-pass.** — A place, between peaks, or higher elevations, where a mountain-chain is passable. Mountain-passes are usually at the angle formed by one part of a chain with another, and consequently, being at the head of valleys, are also at the headwaters of rivers. A pass was sometimes, by the ancients, called a *gate*, as it is now by the Spaniards.

(136.) **Valley.** — A tract of land between hills or mountains.

Remark. The term "valley" may be applied to any depression on the surface of the globe; the beds of the oceans are only great valleys. *Vale* is the diminutive of *valley*, properly applied to undulating depressions between hills.

(137.) **Avalanche.** — An immense mass of snow and ice precipitated, with thundering roar, from mountain-heights into the valleys, and sometimes bearing away, and burying, travellers, huts and entire villages. The term is also applied to masses of earth and rock in Alpine regions which break away and slip down.

(138.) **Glacier.** — Masses of ice, perpetually filling the more elevated parts of valleys in the higher mountain-chains, and always in slow motion. They sometimes descend considerably below the snowy mountain elevations and advance far into comparatively low, fertile valleys. The Alps, Norway, Iceland, Spitzbergen, the shores of the Antarctic Continent, present extensive and remarkable examples. There

are numerous snowy peaks in the Andes, but no glaciers, except in Patagonia, where are to be found the most tremendous and astonishing of the globe. In the Himalaya Mountains, they are but few and small; in the Alps, 400 have been counted, occupying a space of 14,000 sq. miles. These glaciers move slowly downward, "intruding themselves, like unwelcome guests, into the lower valleys." They bear with them immense blocks of stone, with masses of gravel and mud. One of these transported blocks measured 100 feet long by 40 broad. Some of the Swiss glaciers are 400 yards in length; others 20 miles long by 3 broad. Sometimes the lifeless bodies of men, lost among the mountains, are discovered, years afterwards, perfectly preserved in the ice, at places remote from the spot where they perished.

(139.) **Watershed.** — An elevated part or ridge of a country which divides the sources of its streams or rivers—one set, flowing down one of its slopes, the other, down the opposite one.

(140.) **Basin.** — The entire tract of country drained by a river and its tributaries. The basin of a sea is the entire region watered by all the rivers which it receives.

(141.) **Table-land—High plain—Plateau.** — A level, or nearly level, tract of land, at considerable height above the sea. A very large portion of the dry land of the globe consists of extensive, more or less elevated districts.

(142.) **Terrace.** — This term is applied to plateaux, particularly when rising, in succession one above another, as the terraces of Guiana.

(143.) **Plain—Lowland.** — An extensive tract of land nearly flat, as the great northern plain of Europe and Asia, the plains of Lombardy (river Po) and Hungary (Danube). When at about the level of the sea, it is often called *Lowland* or *Lowlands*. Hence the term, as applied to Holland, Pays Bas, Lowlands or Netherlands. The plain of Holland is so low that the whole country, but for the dikes, would be overflowed by the sea. The plain, around the Caspian and Aral seas, sinks considerably below the level of the ocean, forming a vast cavity of 160,000 sq. miles

The surface of the Caspian Sea itself lies 348 feet below the sea level. The low plains and steppes of Europe and western Asia are occasionally crossed by hills swelling in long waves or undulations.

(144.) **Prairie.** — An extensive tract of land mostly level, destitute of trees, covered with tall, coarse grass; as, in the United States, W. of the Alleghany Mts., especially between the Ohio, Mississippi and the five great lakes.

(145.) **Savanna.** — Indian name given to the large grassy plains in the southern part of N. America; as, the Alachua Savanna (Florida).

(146.) **Llanos** (lyanos). — Spanish word for great plains on the Orinoco—on the La Plata, *pampas*.

(147.) **Karroos.** — Extensive interior plains of southern Africa (Cape Colony), occupying most of the terraces between the mountain-ranges. In the great karroo of Cape Colony, there is sometimes no rain for 2 or 3 years. The karroos, the hunting-grounds of the colonists, are wonderfully crowded with various kinds of animals—the antelope, buffalo, elephant, river-horse, rhinoceros, wild ass, zebra, etc.

(148.) **Steppes;** — (from the Russian, *step*, *barren*). Name given to vast level plains, destitute of trees, in south-eastern European and Asiatic Russia. They are marked by fearful extremities of cold and heat. Neither man nor animal can resist their storms, and, in the summer-drought, cattle perish by thousands.

(149.) **Silvas.** — Portuguese name for the vast plains in the valley of the Amazon, densely covered with wood.

(150.) **Desert.** — A vast and barren tract of land; as, desert of Sahara, desert of Gobi or Shamo.

(151.) **Oasis.** — A fertile spot in a desert, watered by springs, as the oasis of Tuat, 100 miles long and 15 wide. They are generally depressions below the surface.

(152.) **Delta.** — A term applied to low tracts of land sometimes found between the forks of a river (172), or at its mouth. These tracts are generally triangular, somewhat in the form of the Greek letter delta Δ , whence the name; as, the delta of the Nile, of the Ganges, of the Niger.

DEFINITIONS OF WATER DIVISIONS.

(153.) **Ocean.** — A vast body of salt water.

(154.) **Sargasso Sea.** — This term is applied to a large tract of the Atlantic, extending nearly from West India Islands to desert of Sahara, between parallels 19° and 30° N. lat., covered at intervals with vast quantities of a marine plant or gulf weed, called *sargasso* (*fucus natans*), torn from its roots, floating in the Gulf stream, and collected at this point, as in the whirl of a vast eddy. It is sometimes called the *fucus bank*. The appearance is that of an immense inundated prairie. It was discovered by Columbus, and caused great alarm to his crew, who feared they would never escape from its entanglement. Similar tracts are found at south-east extremity of South America, in the neighborhood of Falkland Is., in Southern Ocean, south of Indian Ocean, where it is called *Long Kelp*, and in the Pacific, North of Sandwich Is. Ships can scarcely make their way through these obstructions. In some cases, the stems are 800 feet long and nearly a foot in diameter. The weed is not always floating, but sometimes grows up from a submarine plateau.

(155.) **Sea.** — As usually applied, is a body of salt water smaller than an ocean.

(156.) **Archipelago** (ar-ke-pel'-a-go). — A sea studded with groups of islands. The term was originally applied to the sea between Greece and Asia-Minor, i. e. Aegean Sea, and is derived from the Greek, *archos*, chief, and *pelagos*,

sea, because that was the most important sea to the Greeks. A number of *island groups* is sometimes called an archipelago.

(157.) **Tide.** — The alternate rising and falling of the waters of the ocean, with bays, rivers and waters connected therewith. The tide ebbs and flows twice in a little more than 24 hours. The flow or rising of the water is called the *flood-tide*, the descent of the water, the *ebb-tide*. The tide, higher than the common tide, which happens twice a month, namely at, or soon after, the new and full moon, is called the *spring-tide*. The tides which happen near the first and last quarters of the moon, when the difference between high and low water is less than at any period of the month, are called the *neap-tides*. They are the opposite to spring-tides. A tidal wave, following the moon in her apparent diurnal revolution, flows around the earth, arriving at any particular place about 50 minutes later every day.

(158.) **Current.** — A constant and regular movement of portions of the ocean, rivers, etc., in certain directions. Those of the ocean may be regarded as rivers flowing through the ocean.

(159.) **Gulf.** — A portion of water almost surrounded by land.

(160.) **Bay.** — An indentation of the ocean, lying more open than a gulf.

(161.) **Bight.** — A bend between two points of land —synonymous with bay.

(162.) **Port—Haven—Harbor.** — Any bay, cove, inlet or recess of the sea, or of a lake, or the mouth of a river which ships or vessels can enter, and where they can lie safe from injury by storms. Ports may be *natural* or *artificial*; sometimes works of art, as piers and moles, are added to the natural shores of a place, to render a harbor more safe. The word *port*, is generally applied to spacious harbors much resorted to by ships, as the Port of New York or Boston; and not to small bays or coves which are entered occasionally, or in stress of weather only. Harbor includes all places of safety for shipping.

(163.) **Bank.** — An elevation or rising ground in the sea, called also flats, shoals, shelves or shallows. These may rise to the surface of the water or near to it. The word bank signifies, also, elevated ground at the bottom of the sea, when many fathoms below the surface; as, the bank of Newfoundland, which occupies an enormous area.

(164.) **Reef.** — Numerous low rocks lying at, or near, the surface of the water. Those stony habitations, constructed for themselves in various parts of the tropical and adjacent warm seas, by the little coral animals, the zoophytes, are called *coral reefs*. The coral builds not only reefs, but regular islands. In the space of ocean, extending from the southern end of the Low Archipelago (Polynesia) to the northern end of Marshall Archipelago, every island, with one exception, is atoll-formed—atolls being circular groups of coral, with a very shallow salt-water lake within them. Some of these islands measure from fifty to eighty miles in length and nearly twenty miles in breadth.

(165.) **Strait.** — A narrow passage of water separating two pieces of land and connecting two bodies of water. A small strait, or the narrowest part of the strait, is sometimes called a *gut*. The term *strait* is often erroneously used in the plural.

(166.) **Channel.** — A passage connecting two seas or bodies of water, longer and broader than a strait.

(167.) **Sound.** — Nearly the same as a strait, but distinguished from it in not, of necessity, having a double communication with the ocean; it is also in "*soundings*", (that is, not much deeper than eighty fathoms.)

(168.) **Belt.** — A term applied to a narrow passage or strait in the Baltic. The *Great Belt* is the passage between the I. of Seeland and that of Funen, at the entrance of the Baltic.

(169.) **Lake.** — A body of water surrounded by land, often differing from a sea only as being fresh water.

(170.) **River.** — A stream of fresh water flowing into another river, ocean, lake or other body of water; the spring or fountain, from which it first proceeds, is its *source* or *head*; the part, where it empties into another body of water, is its *mouth*; the cavity, in which a river flows, is called its *channel*; the bottom of the channel, its *bed*; the right and left sides, proceeding from the source to the mouth, are its *right* and *left* banks. The banks may be sloping or steep, rocky or fertile. Some rivers, particularly in Africa, lose themselves in sand. The salt tide-water of the oceans enters into many rivers for some distance from the mouth.

(171.) **Frith.** — Firth (furth) — a narrow passage of the sea. The term is occasionally used to designate that part of a river opening into the sea, as the Frith of Forth. It is also sometimes called *Estuary*.

(172.) **Tributary—affluent—fork—branch.** — Another smaller stream which flows into a river; for instance, the Ohio has many large tributary streams and is itself tributary to the Mississippi. The part, at which they unite, is called the *confluence*; as, the confluence of the Tigris and Euphrates, or of the Ohio and Mississippi. The term *fork* is applied to the point where a river divides, or rather where two rivers meet and unite into one stream. Each branch is called a *fork* (152).

(173.) **Cataract.** — A large body of water falling over a precipice. The greatest of the world is believed to be the Falls of Niagara.

(174.) **Cascade or waterfall.** — A small body of water falling over a precipice.

(175.) **Rapid.** — The part of a river where its bed is much inclined and the water rushes down rapidly.

(176.) **Loch.** — In Scotland a lake or an arm of the sea is sometimes called a *loch*, in Ireland *lough* (lock).

(177.) **Whirlpool — Eddy.** — When, by the force of the tide or currents pressing the water diagonally against the shore, or between rocks or banks, a circular direction is given to it, or where a similar effect is produced by the meeting of two currents, or by deep holes causing a downward suction, this is termed an eddy; in the latter case, when very large and powerful, it is called a *whirlpool*. The Maelstrom or Malstrom, a whirlpool off the N. W. coast of Norway, near the Loffoden Isles, presents the appearance of a rapid current, whose dangerous character seems to have been exaggerated. At certain times, it may be traversed without danger. In the winter and in storms, it becomes violent and unnavigable. A celebrated point on Str. of Messina, between I. of Sicily and the mainland of Italy, where strong currents meet and make wild uproar, and where navigation was supposed dangerous, is called *Scylla* and *Charybdis*. The former is a precipitous rock, about 350 feet high; the latter is a strong eddy, now called *Gallofaro*.

(178.) **Wady.** — (Wod'-y) an Arabian word — a river channel, dry, except in the rainy season; as, *Wady Draa* (southern boundary of Morocco). A small valley, a river, even a town, sometimes take this name.

(179.) **Inlet.** — A recess in the shore of a sea, or of a lake, or large river, or between islands — a kind of bay.

(180.) **Remark.** The terms, Sea, Gulf, Bay, Inlet, Bight, are very vaguely used. The Gulf of Mexico might be called a Bay; the Bay of Biscay, a Gulf. A gulf is said to differ from a bay only in extent. A bay is a "large or small recess of the sea"; a gulf is only "a large extent of water". But why do we say, *Bay* of Bengal and *Arabian Sea*; or *Hudson Bay* and *Gulf* of Mexico? Why not *Hudson Gulf* and *Bay* of Mexico? The student will often find the same piece of water called a *gulf*, by one geographer, and a *bay*, by another; as for instance, *Mosquito Bay*.

WATER DIVISIONS.

(PLATE II.)

(181.) *Remark to teacher.* Make no demand upon the pupil's memory. Read, slowly, from text book, three names at a time; the pupil, as he finds each place on the map, *reads* the name aloud. Thus certain that he is not expected to repeat from memory, his confidence becomes every moment greater; his task, as well as that of the teacher, more easy; and the lesson, as he constantly reads from, and contemplates *the map*, gradually engraves itself upon his mind and remains there permanently. No *study* is needed, except the recitation itself, which, for *young* persons, ought not to be extended over one short hour.

(182.) (WESTERN CONTINENT.) — **From Behring Str. to Str. of Belle Isle** (bel-île). — Behring Str., Kotzebue Sound (kot'se-bū), American Polar Sea (with mouth of Mackenzie River) — (*Read these three*). Str. Prince of Wales, North-West Passage, Boothia Gulf — (*Read these three. — Now read from Behring Str.*). Kane's supposed open sea, Kennedy Channel, Kane Sea — (*Read these three. — Now read from Behring Str.*). Smith Str., Baffin Bay, Davis Str. — (*Read these three. — Now read from Behring Str.*). Hudson Bay, Hudson Str., Str. of Belle Isle. — (*How many have we named? mouths of rivers not counted. Read these 15 from Behring Str.*)

(183.) **E. and S. coast of N. America, from Str. of Belle Isle to Mosquito Bay.** — Str. of Belle Isle, G. of St. Lawrence (with mouth of R. St. Lawrence), B. of Fundy — (*R. these 3.*). Long Island Sound, Delaware B., Chesapeake B. (with mouth of Potomac River) — (*R. these 3. — R. from Str. of Belle Isle*). G. of Mexico, Campeachy B., Honduras B. — (*R. these 3. — R. from Belle Isle*). Mosquito B. — (*How many from Str. of Belle Isle? R. these 10. — R. from Behring Str.*)

(184.) **Whole coast of S. America, from Mosquito B., round C. Horn, to B. of Panama.** — Mosquito B., Car-ib-be³ an Sea (with G. of Maracaybo mah-rah-kī'-bo), Darien B. — (*R. these 4.*) Mouth of Amazon River, All Saints B., La Plata River or B. — (*R. these 3. — R. from Mosquito B.*) St. George G., Str. of Magellan (ma-jel'-lan), Guayaquil G. (gwi-ah-keel') (near equator). — (*R. these 3. — R. from Mosquito B.*) Bay of Panama'. — (*How many from Mosquito B.? including mouths of Amazon and La Plata. R. these 11. — R. from Behring Str.*)

(185.) **W. Coast of N. America, from B. of Panama to Behring Str.** — B. of Panama, Tehuan-tepec G. (Ta-wahn'-ta-pek), California G. (with mouth of Colorado River) — (*R. these 3.*) B. of San Francisco, with Str. Golden Gate, Str. Juan de Fuca (Foo'-ka), Queen Charlotte Sound — (*R. these 4. — R. from B. of Panama.*) Cook Inlet, Bristol B., Behring Sea or Sea of Kamtchatka (Kam-chat'-ka) — (*R. these 3. — R. from B. of Panama.*) Norton Sound and Behring Str. (*How many? R. these 12. — R. from Behring Str.*)

(186.) (EASTERN CONTINENT.) — **E. coast of Asia, from Behring Str. to Str. of Malacca.** — Behring Str., Anadir G. (A-na-deer'), Behring Sea or Sea of Kamtchatka again. — (*R. these 3.*) Sea of Okhotsk (O-kotks'), G. of Tartary (with mouth of Amoor River), Japan' Sea — (*Read these 3. — R. from Behring Str.*) Str. of Corea (Ko-ree'-a), Yellow Sea (with mouth of the Yang-tse-kiang), China Sea — (*R. these 3. — R. from Behring Str.*) Tonquin G. (Ton-keen'), Siam G., Str. of Malacca — (*R. these 3. How many? R. these 12. — R. water divisions thus far learned.*)

(187.) **S. coast of Asia, from Str. of Malacca to Red Sea.** — Str. of Malacca, B. of Bengal (ben-gawl') (with mouth of Ganges R.), Palk's Str. (pawks) — (*R. these 3.*) Arabian Sea (with mouth of Indus R.), G.

of Oman (o-mahn'), Str. of Ormus—(*R. these 3.—R. from Malacca*). Persian G. (with mouth of the united rivers, Tigris and Euphrates,—*now out of Persian G. again by*) Str. of Ormus, and G. of Oman—(*R. these 3.—R. from Malacca*). G. of Aden, Str. of Bab-el-man-deb, Red Sea—(*R. these 3.—R. from Malacca—now in Red Sea*) G. of Akabah, G. of Suez—(*R. these 2. How many? R. these 12.—R. water divisions from Behring Str.*)

Remark. G. of Suez—200 m. long, 30 m. broad.—It is supposed that the Israelites, pursued by Pharaoh and his hosts, crossed Red Sea (1491 B. C.), two miles from head of this gulf. Between Gulfs of Akabah and Suez, is MT. SINAI, OR JEBEL-MOOSA ("*Mount of Moses*")—one of a cluster of mountains—where the ten commandments were given. Opinions differ as to which peak was the original Sinai.

(188.) **Coast of Africa, around C. of Good Hope, from Red Sea to Str. of Gibraltar** (je-brawl'-ter).—Red Sea, (*out of Red Sea again by*) Str. of Bab-el-man-deb and G. of Aden (ah'-den)—(*R. these 3*). Mozambique Channel (mo-zam-beek') (with mouth of Zambezi), Delago'a B., (*round C. of Good Hope*), G. of Guinea (ghin'-nee) (with mouth of Niger)—(*R. these 3.—R. from Red Sea and Str. of Bab-el-man-deb*).—Bight of Biafra, Bight of Benin (ben-een'), Str. of Gibraltar—(*R. these 3.—R. from Red Sea—R. all water divisions thus far learned.*)

(189.) **Seven seas and lakes.**—(*Name seven seas and lakes almost in a line, E. and W., with Str. of Gibraltar.*) Mediterranean Sea (with mouth of Nile), Black Sea (with mouths of Danube and Dnieper, nee'-pr), Sea of Azof (with mouth of Don), Caspian Sea (with mouths of Volga and Ural—*R. these 4*). Sea of Aral (with mouth of Sir-Daria or Jaxartes, also of Amoo or Oxus), Lake Balkash, Lake Baikal (bi'-kal). (*R. these 3. How many? R. these 7. Go back again from L. Baikal to Mediterranean. R. from Behring Str. to L. Baikal. R. back again from L. Baikal to Str. of Gibraltar.*)

(190.) **Water divisions of Mediterranean and Black Seas.** (Pl. II. fig. 5.) — Str. of Gibraltar, G. of Lions, G. of Genoa — (*R. these 3*). Str. of Bonifacio (bo-ni-fa'cho), Tyrrhenian or Tuscan Sea (tir-reen'ian), B. of Naples — (*R. these 3. R. from Str. of Gibraltar*). Str. of Messina (mes-see'-na) (*ancient Scylla and Charybdis*), Adriatic Sea (ad-re-at'-ic) or G. of Venice, Str. of Otran'to (*narrowest part between Italy and Turkey*) — (*R. these 3. — R. from Str. of Gibraltar*). G. of Ta'ranto (*hollow of Italy's foot*), Ionian Sea (ī-o'-ne-an), G. of Cor'inth or Lepad'to — (*R. these 3. — R. from Str. of Gibraltar*). Aegean Sea (e-jee'-an) or Grecian Archipelago (ar-ke-pel'a-go), G. of Salonica (sa-lo-nee'-ka), G. of Smyrna — (*R. these 3. — R. from Str. of Gibraltar*). Dardanelles or Hellespont, Sea of Marmora, Str. of Constantinople or Bosphorus — (*R. these 3. — R. from Str. of Gibraltar. For next 3, Pl. III. fig. 1*). Black Sea, Str. of Kertch or Yenikale (yen-e-kah'-le), Sea of Azof — (*R. these 3. — R. from Str. of Gibraltar. Now back again to African coast*). G. of Sidra, G. of Cabes, G. of Aegina or Athens. (*For last, Pl. VI. B. How many? R. these 24. — R. all water divisions thus far learned.*)

Remark. Tyrrhenian or Tuscan Sea — that water which extends between coasts of Italy and Is. of Corsica, Sardinia and Sicily. — G. of Lions — *not Lyons*.

(191.) **Levant.** — The E. coasts and waters of Mediterranean are often called the *Levant* — an Italian term, meaning the "East"; more particularly applied to Turkey, Syria, Asia Minor, Greece, Egypt, etc.

(192.) **Scylla and Charybdis** — the terror of ancient mariners. The Str. of Messina, about 6700 yards wide and 20 miles long, is more than 100 fathoms deep. In the center no bottom has been found. Charybdis (kah-rib'dis) was a whirlpool or eddy on the coast of Sicily; and Scylla (sil'la), a rock on the coast of Italy, whose proximity rendered the navigation dangerous. In the course of ages the waters, aided by artificial means, have worn a wider channel, so that navigation is far less formidable. (177)

(193.) **From Str. of Gibraltar to Behring Str.**
 — *Along W. coast of Europe and N. coasts of Europe and Asia. (For this take Pl. II. and Pl. IV.)* Str. of Gibraltar, B. of Biscay, British Chahnel — (*R. these 3*). Str. of Dover, North or German Sea, with Zuyder-Zee (zI'der zee), Baltic Sea — (*R. these 4. — R. from Str. of Gibraltar*). White Sea, Spitzbergen or Barentz Sea (*between Is. of Spitzbergen and Nova Zembla*), Kara' Sea with mouth of Yenisei (yen-e-say') — (*R. these 3. — R. from Str. of Gibraltar*). G. of Ob or Obi (o'-bee), Asiatic Polar Sea, Polynia — i. e., ice free sea. (*R. these 3. — R. from Str. of Gibraltar. How many? R. these 13. — R. water divisions thus far learned.*)

Remark. North or German Sea, often incorrectly called German Ocean. — For Zuyder-Zee, Pl. VI. B.

(194.) **Water divisions of Baltic.** (Pl. III. fig. 4.)
 — Skager Rack, Cattegat (kat'-te-gat), Sound — (*R. these 3*). Belt, G. of Dantzic, G. of Riga (ree'-ga) — (*R. these 3. — R. from Skager Rack*). G. of Finland, G. of Bothnia. (*How many? R. these 8. — R. water divisions thus far learned.*)

(195.) **Waters of Great Britain and Ireland.**
 — Pl. VI. B. — Murray Frith, Frith of Forth, Mouth of Humber — (*R. these 3*). The Wash, Mouth of Thames, Str. of Dover — (*R. these 3. — R. from Murray Frith*). English Channel, with Estuaries of Southampton and Portsmouth Bay, Bristol Channel, St. George's Channel — (*R. these 5. — R. from Murray Frith*). Irish Sea, Frith of Clyde or Dumbarton, North Channel — (*R. these 3. — R. from Murray Frith*). The Minch. (*How many? R. these 15. — R. all water divisions thus far learned.*)

(196.) **Water divisions of Oceania.** — (Pl. II.) — Java Sea with Str. of Sunda, Banda Sea, Torres Str. — (*R. these 4*). Carpentaria Gulf (kar-pen-ta'-re-a), Moreton B., Botany B. — (*R. these 3. — R. from Java Sea*).

Bass Str., Great Australian Bight. (*How many? R. these 9. — R. water divisions thus far learned.*)

(197.) **Water divisions of Antarctic Continent.**
Pl. II. — *S. of Australia*: Repulse B. — *S. of S. America*: George IV. Sea. *How many? R. these 2. — R. all water divisions thus far learned. — The mouths of how many rivers have we given? — Name those 24. — Mackenzie, St. Lawrence, Potomac, Mississippi, Amazon, La Plata, Colorado, Columbia, Amoor, Yang-tse-Kiang, Ganges, Indus, Tigris and Euphrates, Zambeze, Niger, Nile, Danube and Dnieper (Black Sea), Don (Sea of Azof), Volga (Caspian Sea), Sir-Daria or Jaxartes, Amoo or Oxus (Aral Sea), Yenisei.*

LAKES.

(PLATE II.)

(198.) (W. CONTINENT.) Remark a line of fresh water lakes, running in a S. E. direction, through N. America, from Arctic to Atlantic. One, called *Great Salt Lake*, lies apart, to the S. W. among Rocky Mts. We name these by fives.

(199.) **Lakes of N. America.** — (*E. of Rocky Mts.*). Great Bear Lake, Great Slave Lake, Athaba'sca Lake, Lake Win'nepeg, Lake of the Woods — (*R. these 5*). L. Superior, L. Michigan (mish'e-gan), L. Huron, L. Erie, L. Ontario (on-ta're-o) (*between two last — Falls of Niagara. — R. these 5. — R. from Great Bear L. Apart and W. of Rocky Mts., 4200 feet above the sea*). Great Salt Lake. — (*How many? R. these 11.*)

Remark. Lakes Superior, Michigan, Huron, Erie, Ontario pour their surplus waters into Atlantic by the RIVER ST. LAWRENCE.

(200.) **Lakes of Central America.** — Nicaragua Lake. — (*How many? R. the 12.*)

(201.) **Lakes of S. America.** — Lake Titicaca (te-te-ka'-ka), (*one of the most elevated of the world: 11,540 feet above the sea. How many? R. 13 lakes of W. Continent.*)

(202.) (E. CONTINENT.) **Lakes of Europe.** — *Remark.* Of the twenty or thirty most prominent we here name only three, in N. Europe. Wener L. (*Sweden*), Lakes Ladoga and Onega (*between Baltic and White Sea*).

(203.) **Lakes of Asia.** — *Remark.* Although we have previously (189) read several inland waters of Asia, we here take them again. Caspian Sea, Sea of Aral, L. Balkash (*R. these 3*). L. Baikal, L. Ten'gri-Nor (*the latter among Himalaya Mts., highest in the world, 12,500 feet. How many? R. these 8.—R. lakes of Europe—of Asia—the whole already learned.*)

(204.) **Lakes of Africa.** — L. Melrhir, L. Tsad, L. Tsana or Dembea—(*R. these 3*). L. Albert-Nyanza, L. Victoria-Nyanza, or Ukere'we, L. Tanganyika—(*R. these 3. R. from L. Melrhir*). L. Nyassi, L. Ngami (n'ga'-mee).—(*How many, including Caspian and Aral Seas? R. these 16.*)

Remark. The words *Nyassi* and *Nyanza* mean "lake", in the aboriginal dialect. L. *Melrhir* is salt and below the sea-level. It is also called *Melgig*.

(205.) **Lakes of Australia.** — Lake Eyre (air), (*a salt-lake.—How many? R. these 17.—R. lakes of W. and E. Continents.—R. water divisions of the world.*)

(206.) **Questions.** — Define word Strait? (165) (The teacher will cause pupil to repeat definition; then, to give examples). Channel? (166)—Sound? (167)—Belt? (168)—Lake? (169)—Bight? (161)—Bay? (160)—Gulf? (159)—Archipelago? (156)—Sea? (155)—Estuary (171)—Inlet (179)—Frith? (171)—Eddy or Whirlpool? (177). At close, teacher read remark (180).

ISLANDS.

(PLATE II.)

(207.) (W. CONTINENT). — **Arctic Archipelago, from Behring Str. to Str. of Belle Isle.** — Baring I., Victoria I., King William I. (*R. these 3*). Parry Is. with Melville I., North Devon (*R. these 3*. — *R. from Baring I.*). Cockburn I., Grinnell Land, Greenland — (*R. these 3*. — *R. from Baring I.*). Iceland. (*How many? R. these 10.*)

Remark. Iceland. (Pl. II; see also Pl. I figs. I, H, L — also Pl. IV), lying nearer Greenland than European coast, is, by many geographers, included among American polar islands, although its population and civilisation are European.

(208.) **From Str. of Belle Isle to Mosquito Bay.** — Newfoundland, Archipelago of St. Lawrence, Long Island — (*R. these 3*). Bermuda or Somers Is.,* West Indian Is., to Mosquito B. (*How many? R. these 5*. — *R. from Baring I.*)

(209.) **From Mosquito Bay to B. of Panama.** — Trinidad I., Falkland Is., Terra del Fue'go Is. (*fwa'-go*). (*R. these 3*). Antarctic Archipelago (consisting of South Georgia, Sandwich group, South Orkney, and South Shetland Is.), — (*R. 4. Then from Trinidad*). Wellington Is., Chonos Is. (*ko'-nos*) (*sometimes called Chonos group or Chonos Archipelago* — *R. these 2*. — *R. from Trinidad I.*). I. of Chiloe (*chil-way'*), I. of Juan Fernandez, Chinchá Is. (*cheen-cha'*). (*R. these 3*. — *R. from Trinidad I.*) Seal or Lobos Is., Galapa'gos or Tortoise Is. (*How many? R. these 14*. — *R. all islands from Baring I.*)

(210.) **From B. of Panama to Behring Str. or Island.** — Revilla-Gigedo (*ra-veel'ya hee-hay'-do*), Van-

* The scene of Shakspeare's *Tempest* was laid in one of these islands.

couver I., Queen Charlotte Is. — (*R. these 3*). Prince of Wales I., Sitka I., Kodiak I. (*R. these 3*. — *R. from Revilla-Gigedo*). Aleutian Archipelago (a-lu'she-an) or Fox Is., Baring I. again. (*How many? R. these 8*. — *R. all islands of W. Continent.*)

Let us now return (Pl. III. fig. 3.) to:

(211.) **West India Islands** — about 60 in number, belonging, (except Hayti, which is independent), to Spain, Gr. Britain, France, Denmark, Sweden, Venezuela, Holland.

(212.) **W. India Islands divided into:** Bahama Is. (bay-hay'-ma), Greater Antilles, Lesser Antilles, (an-teel') S. American Coast Is. — (*R. these 4*.)

(213.) Among Greater Antilles are: Cuba with Isle of Pines, Jamaica, Hayti (hay-tee) or San Domingo — (*R. these 3*). Porto Rico — (*R. these 4*. — *R. from Bahama Is.*).

(214.) Among Lesser Antilles are: Virgin Is., Santa Cruz, St. Bartholomew — (*R. these 3*). Guadaloupe (gaw-da-loop'), Martinique, Barbadoes (bar-bay'-dos) — (*R. these 3*. — *R. from Virgin Is.*). British Trinidad. — (*How many? R. these 7* — *R. from Bahama Is.*)

(215.) Among S. American Coast Is. are: Curaçoa (ku-ra-so'a). (*R. from Bahama Is.*)

(216.) **West India Is. according to nationalities.** — *To Spain belong:* Cuba, Isle of Pines, Porto Rico — (*R. these 3*). *To Gr. Britain:* Bahama Is., Jamaica, Barba'does, Trinidad — (*Read these 4*. — *R. from Cuba*). *To France belong:* Guadaloupe, Martinique — (*R. these 2*. — *R. from Cuba*). *To Denmark belong:* Santa Cruz — (*R. this*. — *R. from Cuba*). *To Sweden:* St. Bartholomew. *To Venezuela:* part of S. American coast Is.

To Holland: Curaçoa, etc. (How many? R. these 13.—R. all West India Is.)

(217.) **Questions on West India Is.** — *To whom do the West India Is. belong? (211)—How are they divided? (212)—Among Greater Antilles (an-teel') are—? (213). Among Lesser Antilles are—? (214) In what division is I. of Curaçoa? (215). Name governments to which following Is. belong. Curaçoa? Holland.—St. Bartholomew? Sweden.—Santa Cruz (kroos)? Denmark.—Guadaloupe and Martinique? France.—Cuba? Spain.—Jamaica (ja-may'ka)? Great Britain.—Porto Rico? Spain.—Barbadoes? Gr. Britain.—Isle of Pines? Spain.—Trinidad (trin-e-dad')? Gr. Britain.—(R. all from Baring I.)*

(218.) **(E. CONTINENT).—From Behring Str. to Str. of Malacca.** — Koorile Is., Saghalin Is., Island Empire of Japan — *(R. these 3). Empire of Japan consists principally of four large islands: Nippon, Yesso, Kiou-Siou and Sikoke (see-kok'), (R. these 4.—R. from Behring Str.) Lew Chew Is., (Loo-choo) Formosa I., British I. of Hong-Kong—(R. these 3.—R. from Behring Str.). Hainan I., Singapore. (How many?—R. these 12 from Behring Str.)*

(219.) **From Str. of Malacca to Red Sea.** — Andaman Is., Nicobar Is., I. of Ceylon (see'-lon) — *(R. these 3). Maldive Is., Laccadive Is., I. of Socotra. (How many?—R. these 6.—R. from Behring Str.)*

(220.) **From Red Sea around Africa to Str. of Gibraltar.** — Seychelles Is. (sa'-shell), Amirante Is. (am-e-rant'), Comoro Is. Madagascar I. *(a kingdom—R. these 4).—Mascarene Is. (mas-ka-ren') (consisting of Rodriguez, Mauritius or Isle de France, Réunion (formerly Bourbon). R. these 8). Kerg'uelen Land or I. of Desolation—(R. these 9 from Red Sea). Tristan da Cunha (da-koon'-ya), St Helena (hel-ee'-na), Ascension—(R. these 12 from Red Sea). Annobon' I., St. Thomas, Fernando Po I.*

—(*R. these 15 from Red Sea*). Cape Verde Is., Cana'ry Is., Madeira Is. (ma-da'-ra)—(*R. these 18 from Red Sea*). Azores Is. (*Hawk Is. in portuguese. How many?—R. these 19.*—*R. from Behring Str. to Str. of Gibraltar. Point out four last on Pl. IV.*)

Remark. The inhabitants of Madagascar I. are of various races; some with the black skin and woolly hair of the negro; some mulattoes; and some resembling the Malays. The whole population is colored except about the one-twentieth part. "Their religion is a rude species of polytheistic idolatry, and the monarch is the high priest as well as the despotic ruler of his subjects. The prevailing language, called Malagasse, bears no resemblance to those of the opposite coast of Africa, but is very similar in construction and forms to the Tagala, the most perfect of Polynesian dialects. Christianity was introduced, for the first time, in 1818, and the Scriptures have since been translated into Malagasse. Under the late king, Radama, the missionaries were protected, civilization introduced, slave-trade abolished, and schools established; but since his death, a disastrous change has taken place. The profession of Christianity is prohibited under severe penalties, the missionaries expelled, and many of the converts massacred.*

(221.) **Mediterranean Is.** — Pl. II. fig. 5. Balearic Isles, (*consisting of Iviça, Majorca, Minorca*)—(*R. these 3*). Elba, Corsica, Sardinia—(*R. these 3.*—*R. from Balearic Isles. Now close to Naples*), Ischia and Capri—(*R. these.*—*R. from Balearic Isles*). Lipari Is. (lee'-pa-re), Sicily, Malta—(*R. these 3.*—*R. from Balearic Is.*). Ionian Isles and Grecian Archipelago—(*R. these*—*R. from Balearic Is.*). Candia, Rhodes (rōdz), Cyprus (sī-prus). (*How many have we named, counting Balearic Is. as three?—R. these 16.*)

(222.) **Baltic Sea Islands.** — Pl. III. fig. 4. Zealand, Rugen, Bornholm—(*R. these 3*). Oeland (o'land),

* Manual of Modern Geography by Rev. Alexander Mackay. Edinburg and London.—one of the best.

Gothland (goth'-land), *land of the Goths*, Oesel (o'-sel).—*(R. these 3.—R. from Zealand)*. Dagoe (da-go-eh), Aland (ah-land). *(How many?—R. these 8.)*

(223.) **From Str. of Gibraltar to Behring Str.** — Pl. II. — British Channel Is. (224), Heligoland, British Is. (*i. e. Gr. Britain and Ireland*)—*(R. these 3)*. Hebrides (heb'-rid-eez) or Western Is., Orkney Is., Shetland Is. — *(R. these 3.—R. from British Channel Is.)*. Faroe Is. (Fah'-ro) *(not to be confounded with Ferro I., the most south-west of Canary Is.)* Lofoden Is. (Lof-fod'en), Iceland (again)—*(R. these 3.—R. from British Channel Is.)*. Jan Mayen I. (yan-mi'-en), Spitzbergen, Nova Zembla—*(R. these 3.—R. from British Channel Is.)*. New Siberia Is., Herald I. *(here, Captain Kellet (1848), saw, in the distance, an unknown, unexplored coast, indicated on Plates II and IV. How many?—R. these 14.)*

(224.) **British Channel Is.** — Pls. VI. B. Jersey, Guernsey, Alderney—*(R. these 3)*. I. of Wight, I. of Man *(Irish Sea. How many?—R. these 5.—R. all islands from Behring Str. to Behring Str., around W. and E. Continents.)*

(225.) **Islands of Oceania.** — Pls. II. and IV. *(for subdivisions see Pl. I. G. F. E).*

MALAYSIA — Sumatra, Java, Borneo—*(R. these 3)*. Celebes, (sel'-e-bes or beeze), Moluc'cas, Philippine (fil'-i-pin'). *(How many?—R. these 6.)*

Remark: Malaysia is sometimes called, by various other names, as *Malay, Indian, Asiatic, Eastern Archipelago*. Many of these Is. present lofty volcanic peaks.

AUSTRALASIA — Australia, Tasmania *(formerly Van Dieman's Land (van Dee-mens) Papua or New Guinea (pa-poo-a)—(R. these 3)*. Macquarie I. *(most southern of Oceania)*, New Zealand, New Caledonia. *(How many?—R. these 6.—R. 12 Is. of Malaysia and Australasia.)*

POLYNESIA — **Ladrones** (lad-ronz'), **Marshall Is.**, **Sandwich or Hawaiian Is.** (ha-wi'-ee-an) — (*R. these 3*). **American Polynesian Is.**, **Fejee Is.**, **Friendly Is.** — (*R. these 3*. — *R. from Ladrones*). **Society Is.** with **Tahiti** (ta-hee'-tee), **Low or Dangerous Is.**, **Pitcairn I.** — (*R. these 4*. — *R. from Ladrones*). **Marquesas.** (*R. from Ladrones*. *How many of Malaysia? of Australasia? of Polynesia?* — *R. 23 Is. of Oceania* — *R. Is. of W. and E. Continents*. — *Repeat lesson on Oceania* — *Pl. IV*).

PENINSULAS.

(PLATE II.)

(226.) (W. CONTINENT.) — **From Behring Str. to Str. of Belle Isle.** — **Boothia Felix P.**, **Melville P.**, **P. of Labrador.** — (*How many? — R. these 3*.)

(227.) **From Str. of Belle Isle to Mosquito Bay.** — **P. of Nova Scotia**, **P. of Florida**, **P. of Yucatan.** — (*How many? R. these 3. — R. from Boothia Felix P.*)

(228.) **From Mosquito B. to Behring Str.** — **P. of California**, **P. of Aliaska** (al-yas'-ka). — (*How many? R. these 2. — R. from Boothia Felix P.*)

(229.) (E. CONTINENT.) — **From Behring Str. to Str. of Malacca.** — **P. of Tchooktchees** (chook-cheez), **P. of Kamtchatka**, **P. of Corea** — (*R. these 3*). **P. of Chin-India or Indo-China**, **P. of Cambodia** and **P. of Malacca** (*southern part of Indo-China. — How many? R. these 6.*)

(230.) **From Str. of Malacca to Red Sea.** — **P. of Hindostan**, **P. of Arabia**, **P. of Sinai** (*up the Red Sea. — How many? R. these 3.*)

(231.) **From Red Sea (around C. Good Hope) into Mediterranean and Black Seas.** — P. of Somaui (so-maw'-lee), Spanish P., P. of Italy — (*R. these 3*). Grecian P. (including P. of Peloponnesus or Morea Pl. VI. B), P. of Asia Minor, P. of Crimea (krim-ee'a). — (*How many? R. these 7. — R. from P. of Tchooktchees.*)

(232.) **From Str. of Gibraltar to Behring Str.** — Spanish P., P. of Brittany, Danish P. or P. of Jutland — (*R. these 3*). P. of Scandinavia, P. of Taimoor (tī-moor'). — (*How many? R. these 5. — R. from P. of Tchoaktchees.*)

Remark. The Spanish P. is often, in English literature, called "*the peninsula*"; and Brittany, generally, except in England, *Bretagne*.

(233.) **Peninsulas of Oceania. (Australia).** — Arnhem P., York P. — (*R. these 2*).

(234.) **Peninsulas of Antarctic Continent.** — Graham Land P. (*opposite C. Horn.* — *R. peninsulas from Boothia Felix P.*).

CAPES.

(PLATE II.)

(235.) (W. CONTINENT.) — **From Behring Str. to Str. of Belle Isle.** — C. Prince of Wales, C. Lisburn, Point Barrow or Cape North — (*R. these 3*). C. Bathurst, C. Constitution, C. Farewell — (*R. these 3. — R. from Behring Str.*). C. Reikianac (*Iceland*); C. Chidley, C. St. Louis. — (*How many? R. these 9.*)

(236.) **From Str. of Belle Isle to Mosquito Bay.** — C. Race, C. Canso, C. Sable (*Nova Scotia*) — (*R. these 3*). C. Cod, Sandy Hook, C. Hatteras (*R.*

these 3.—*R. from Belle Isle.* C. Sable (*Florida*), C. Catoche (ka-to'-che), C. Gracias-a-Dios (gra-se-as-a-dee'-oce).—(*How many? R. these 9.*—*R. from Behring Str.*)

(237.) **From Mosquito B. to B. of Panama.**—Point Gallinas (gal-yee'-nas), C. St. Roque (ro-ke), C. Frio (free'-o)—(*R. these 3*). C. Delgado, C. Horn, C. Froward. (*R. these 3.*—*R. from Mosquito B.*). C. Parina, C. Blanco.—(*How many? R. these 8.*—*R. from Behring Str.*)

(238.) **From B. of Panama to Behring Str.**—C. Corrientes, C. St. Lucas, C. Mendocino (men-dosee-no).—(*R. these 3*). C. Romanzoff.—(*How many? R. these 4.*—*R. from Behring Str.*)

(239.) (E. CONTINENT) — **From Behring Str. to Str. of Malacca.**—East Cape, C. Lopatka, C. King (*Japan*)—(*R. these 3*). C. Cambodia, C. Romania (*Malacca, near Singapore*—*R. these 5 from Behring Str.*)

(240.) **From Str. of Malacca to Red Sea.**—C. Com'orin, C. or Ras-el-Had, and (*up Red Sea, at the S. extremity of P. of Sinai*) C. or Ras Mohammed, C. Guardafui (gwar-da-fwee').—(*How many? R. these 4.*—*R. from Behring Str.*)

(241.) **From Red Sea to Str. of Gibraltar.**—C. Amber and C. St. Mary (*Madagascar I. and Kingdom*), C. Corrientes—(*R. these 3*). C. Agulhas (a-gool'-yas), C. of Good Hope, C. Coast Castle—(*R. these 3*—*R. from Red Sea*), C. Palmas, C. Mesurado (mes-oo-ra'-do), C. Roxo (ro'-sho)—(*R. these 3*—*R. from Red Sea*). C. Verde, C. Blanco, C. Spartel.—(*How many? R. these 12.*—*R. from Behring Str.*)

(242.) **From Str. of Gibraltar around Mediterranean Sea.**—Pl. II. fig. 5.—C. Gata (*Spain*), C. Palos, C. Teulada (*Sardinia*) (te-oo-la'-da)—(*R. these*

3). C. Passaro (*Sicily*), C. Spartivento (*Italy*), C. Leuca — (*R. these 3. — R. from Str. of Gibraltar*). C. Matapan (*Greece — a promontory*), C. Bon (*Africa. — How many? R. these 8. — R. capes of E. Continent thus far learned.*)

(243.) **From Str. of Gibraltar to Behring Str.** — Pl. II. C. St. Vincent, C. Finisterre, C. St. Matthieu (math'u) — (*R. these 4*). C. Land's End with Lizzard Point (*England*) (*too near south of Land's End for Pl. II. — see Pl. VII*), C. Clear (*Ireland*), C. Wrath (*Scotland*) — (*R. these 4 — R. from Str. of Gibraltar*). The Naze (*Scandinavia*), C. Platen and South Cape (*Spitzbergen I.*) — (*R. these 3 — R. from Str. of Gibraltar*). North Cape (*the northern most of Europe. — How many? R. these 11. — R. capes from Behring Str. to Behring Str. again.*)

(244.) **Capes of Oceania.** — (*Australia and Tasmania*), C. York, C. Moreton, C. Wilson, South Cape, C. Chatam — (*R. these 5*). North Cape and East Cape (*New Zealand — W. Hem. — How many? R. these 7. — R. from Behring Str.*)

(245.) **Capes of Antarctic Continent.** — C. Possession (*S. of C. Horn*), C. Ann (*S. of Madagascar*), C. Adare (a-dair) (*S. of New Zealand. — How many? R. these 3. — R. capes thus far learned.*)

(246.) *Remark to teacher.* After completing capes, the teacher will ask some questions, like the following. The pupil, of course, where necessary, will answer from the map. *What waters surround P. of Nova Scotia? — Italy? — Hindostan? — Kamtchatka? — Scandinavia? — Yucatan? — Denmark? — etc. What island is washed by Queen Charlotte Sound and Str. of Juan de Fuca? — by Str. of Magellan? — What pieces of land are separated by Str. of Gibraltar? — Str. of Ormus? — Bab-el-man-deb? — Belle Isle? What lands form G. of St. Lawrence, etc.*

MOUNTAIN-CHAINS.

(PLATE II.)

(247.) Plate II is constructed to show, at a glance, five different elevations of the globe's surface above the sea level.

The *green* marks elevations — to 1000 English feet, including lowlands, undulating regions, hills, plains, etc.

The *light brown* — from 1000 to 3000 feet.

The next *deeper brown* — from 3000 to 10,000 feet.

The *black* — from 10,000 to 29,000 feet.

The *white* — perpetual snow.

(248.) We divide mountains into three classes:—*Mountains of W. Continent*;—*Mountains of E. Continent*;—*Island Mountains, including Australia and Antarctic Continent*.

One mighty chain, in length about 9000 miles, traverses W. Continent, nearly north and south. Another, in length about 10,000 miles, crosses E. Continent, nearly east and west. Each intersects its respective continent, something as the backbone does a fish. The culminating point of the New World is believed to be Mt. ACONCAGUA (Chili), 23,910 feet; that of the Old World, GOWRISHANKAR or MT. EVEREST (Nepaul near Hindostan), 29,002 f.

(249.) (W. CONTINENT.) — **Great Pacific Range.** — A single immense chain stretching from C. Horn to Arctic Ocean, bears the general name of *Great Pacific Range*, but has received local appellations, in different latitudes and countries. In S. America, *Andes*; in N. America, *Volcanoes of Central America*, *Cordilleras of Mexico* with *Sierra Madre* (se-er'-rah mah'-dray), *Wahsatch Mts.* (settlement of the Mormons) and *Rocky Mts.* (R. these 6).

(250.) **Four Eastern Side Ranges.** — From whole *Pacific Range*, but separated by great valleys, and, in one instance, by the ocean, beginning at C. Horn, extend, on E., four subsidiary systems:—*Mts. of Brazil* (brah-zil');—*Mts. of Guiana* (ghe-ah'-nah) with *Sierra Parime* (pa-ree-me); *West India Island Mts.*;—*Alleghany or Appalachian Mts.*—(R. these 5—R. from *Andes*).

(251.) **Western Side Range.** — A western parallel chain or system of *Rocky Mts.*, running, along Pacific coast of N. America. up to Mt. St. Elias, bears different names:—*Sierra Nevada* (nay-vah'-dah), *Cascade Mts.* and *Coast Range*. This western parallel system traverses California, Oregon, Washington Territory, British America, and a portion of Russian America. The name, *Sea Alps*, is, by German geographers, sometimes applied to the *Coast Range*.—(R. these 3—R. 14 from *Andes*).

(252.) (EASTERN CONTINENT.) — **Great Central Trunk of Asia and Europe** — starts from Sea of Okhotsk, Sea of Japan, Yellow and China Seas, traverses southern Asia, overleaps Caspian, Black and Mediterranean Seas, strikes broadly across Southern and Central Europe, grazes N. coast of Africa, and seems to re-appear in Azores, Madeira, and Canary Is. Let us now follow its various principal names in Asia and Europe.

(First in Asia). *Himalaya Mts.*, *Hindoo Koosh*, *Elbruz Range* (on plateau of Persia, south of Caspian Sea)—(R. these 3). *Caucasus* (between Black and Caspian Seas), *Taurus* (on P. of Asia Minor), and, (striking from Taurus, south, through Palestine or Holy Land, to Sinai Peninsula,) *Syrian or Lebanon Mts.*—(How many? R. these 6.)

(Now in Europe)—continuing great Central Trunk—*Balkan Mts.*, *Great Alpine System* and *Pyrenees*.—(How many? R. these 3—R. from *Himalaya Mts.*)

(253.) **Northern Side Ranges of Asia.** — Grouped, on the N., around Himalaya Mts., and, in some degree, forming parts of them — *Karakorum Mts.*, *Kuenlun Mts.*, *Thian-Shan* or *Celestial Mts.*, and *Altai* — (R. these 4).

(254.) **Southern Side Ranges of Asia.** — *Mts. of Chin-India* or *Indo-China* and *Ghauts* (Hindustan) — (R. these 2 — R. from *Karakorum Mts.*)

(255.) **Northern Side Ranges of Europe.** — *Carpathian Mts.*, *Mts. of Middle Germany*; then, still farther north, three isolated systems — *Ural Mts.*, *Scandinavian Mts.*, and *Mts. of British Isles* — (R. these 5. — R. from *Karakorum Mts.*)

(256.) **Southern Side Ranges of Europe.** — *Grecian Mts.*, *Apeninnes*, *Sierra Nevada* — (R. these 3. How many altogether, in Asia, including central trunk and side-chains? R. these 12. — How many altogether in Europe? R. these 11. — R. 13 mountain-chains (that is, *Great Pacific Range* and *side-ranges*) of *W. Continent.* — R. 23 chains of *E. Continent*).

(257.) **Mountains of Africa.** — We now leave great central trunk of Asia and Europe, with its side branches, and take *Africa*, separately. In the N. W., *Atlas*, *Plateau* and *Mts. of Abyssinia* (*Red Sea*), *Mts. of the Moon* or *Snow Mts.* (sometimes called *Jebel-el-komri*) — (R. these 3); *Drakenberg*, *Cameroon Mts.*, *Kong Mts.*, and *Mts. of Air* or *Asben* (*Desert of Sahara*) — (R. these 4 — R. these 7 — R. 13 mountain-chains of *W. Continent* — 30 mountain-chains of *E. Continent* (that is 12 of Asia, 11 of Europe, 7 of Africa).

Remark. The table-lands and mountains of E. Africa might be said to be also connected, by the elevated Arabian and Persian plateaux, with Great Central Trunk of Europe and Asia.

(258.) **Review of Mountain Chains.** — We will read over list of mountain ranges from Great Pacific Range.

(W. CONTINENT.) GREAT PACIFIC RANGE. — *Andes* — *Volcanoes of Central America* — *Cordilleras of Mexico* — *Sierra Madre* — *Wahsatch Mts.* — *Rocky Mts.*

(259.) FOUR EASTERN SIDE RANGES. — *Mts. of Brazil* — *Mts. of Guiana with Sierra Parime* — *West India Island Mts.* — *Alleghany or Apalachian Range.*

(260.) WESTERN SIDE RANGE (of Rocky Mts. — with three different names) — *Sierra Nevada* — *Cascade Mts.* — *Coast Range.*

(261.) (E. CONTINENT.) GREAT CENTRAL TRUNK. — (Asia) *Himalaya* — *Hindoo Koosh Mts.* — *Elbruz Range* — *Caucasus* — *Taurus* — *Syrian or Lebanon Mts.* (Europe) *Balkan Mts.* — *Alpine System* — *Pyrenees.*

(262.) NORTHERN SIDE RANGES OF ASIA. — *Karakorum Mts.* — *Kuenlun Mts.* — *Thian-Shan or Celestial Mts.* — *Altai.*

(263.) SOUTHERN SIDE RANGES OF ASIA. — *Mts. of Chin-India or Indo-China* — and *Ghauts* (Hindustan).

(264.) NORTHERN SIDE RANGES OF EUROPE. — *Carpathian Mts.* — *Mts. of Middle Germany* — ; (still farther N. — three isolated groups) *Ural Mts.* — *Scandinavian Mts.* — *Mts. of British Isles.*

(265.) SOUTHERN SIDE RANGES OF EUROPE. *Grecian Mts.* — *Apennines* — *Sierra Nevada.*

(266.) MOUNTAINS OF AFRICA. — *Atlas—Plateau and Mts. of Abyssinia—Mts. of the Moon or Snow Mts. (Jebel-el-Komri)—Drakenberg—Cameroon Mts.—Kong Mts.—Mts. of Air or Asben.*

MOUNTAIN HEIGHTS OR PEAKS.

(267.) We now select some chief separate heights of this great skeleton of mountain chains. The words, "no peak", mean merely, *no peak of sufficient importance for our list.* The arabic numbers, giving the height, need not be read more than once.

(WESTERN CONTINENT.) **Great Pacific Range.** First repeat the six different names of this range (258). *For doubt as to Aconcagua (301).*

(S. AMERICA)—*Andes Chain.*—Chief peaks are: ACONCAGUA, 23,910 f., SAHAMA, 23,014 f., ILLIMANI (eel-yah-mah'-nee), 21,150 f. (*R. these 3*). CHIMBORAZO (chim-bo-rah'zo), 21,424 f., COTOPAXI (ko-to-pax'ee), 18,875 f., TOLIMA, 18,000 f. (*R. these 3—R. the six from Aconcagua*).

(N. AMERICA) — *Volcanoes of Central America.* — V. IRASU, 11,200 f., V. AGUA, 15,000 f. (*R. these 2—R. 8 from Aconcagua*).

*Cordilleras of Mexico with Sierra Madre—*POPOCATEPETLE, 17,780 f., ORIZABA, 17,372 f. (*R. these 2—R. 10 from Aconcagua*).

Wahsatch Mts. — No peak.

Rocky Mts. — PIKE'S PEAK, 11,497 f., FREMONT'S PEAK, 13,570 f., MT. MURCHISON, 15,790 f. (*R. these 3*). MT. BROWN, 16,000 f., MT. HOOKER, 16,750 f. (highest measured point of Rocky Mts.). (*R. these 2—R. 15 from Aconcagua*).

(268.) **Four Eastern Side Ranges.** — R. them (259). *Mts. of Brazil—*MT. ITAMBE (e-tahm'bay), 6000 f.

Mts. of Guiana with Sierra Parime. — MT. RORAIMA (ro-rī'-mah), 7500 f., MT. MARAVACA, 10,500 f. (*R. these 2—R. from Mt. Itambe—R. from Aconcagua*).

West India Island Mts. — PICO TURQUINO (toor-kee'no), highest point of Sierra Maestra, in Cuba, 7670 f., BLUE MTS., in Jamaica, 7770 f., MT. CIBAO, in Hayti, 7200 f. (*R. these 3—R. 6 from Mt. Itambe—R. 21 from Aconcagua*).

Alleghany or Apalachian Mts. — BLACK MTS. with BLACK DOME, in N. Carolina, 6707 f., WHITE MTS. with MT. WASHINGTON, in New Hampshire, 6288 f. (*R. these 4—R. 10 from Mt. Itambe—R. 25 from Aconcagua*).

(269.) **Western Side Range** — (with three different names).—*R. them.—Sierra Nevada, Cascade Mts. and Coast Range.* — The peaks are: MT. SHASTA, (Calif.) 14,440 f., MT. HOOD, 14,361 f., MT. OLYMPUS, 8000 f. (*R. these 3*). MT. FAIRWEATHER, 14,788 f., MT. ST. ELIAS, 14,970 f. (*R. these 2—R. 5 from Mt. Shasta—R. 30 from Aconcagua*).

(270.) (EASTERN CONTINENT.) — **Great Central Trunk.** — *R. names of this Trunk (261).*

(ASIA.) *Himalaya Mts.* (him-a-lay-a), KUNCHINJINGA, 28,000 f., GOWRI SHANKAR or MT. EVEREST, highest measured peak in the world, 29,000 f., DHOLAGIRI or DHAWALAGIRI (da-wol-a-gher'-ee), 26,826 f. (*R. these 3*).

Hindoo Koosh. — HINDOO KOH, 20,000 f. (*R. from Kunchinjinga*).

Elbruz Range (on plateau of Persia, south of Caspian). — DEMAVEND, 18,464 f. (*R. 5 from Kunchinjinga*).

Caucasus. — MT. ELBRUZ, 18,570 f., MT. ARARAT, 16,964 f. (*R. 7 from Kunchinjinga*).

Taurus. — MT. ARGAEUS, 13,100 f. (*R. 8 from Kunchinjinga*).

Syrian or Lebanon Mts. — MT. HERMON, 9400 f., MT. SINAI, 9000 f. DHOR EL-CHOTIB, 10,061 f. (*R. these 3. R. 11 from Kunchinjinga*).

Remark. 1. *Mt. Elbruz*, highest peak of Caucasus—not to be confounded with *Elbruz Range*, on plateau of Persia, south of Caspian (sometimes called *Elburz*). 2. The snow-capped Mt. Hermon (*Lebanon Range*)—the modern *Jebel-esh-Sheikh* (jeb'el-esh-shaik)—one of the culminating points of Syria, commands a deeply interesting view.

R. names of Great Central Trunk in:

(EUROPE.) — *Balkan Mts.*—No peak.

Great Alpine System. — MONT BLANC, 15,810 f.

Pyrenees. — PIC NETHOU, 11,168 f., MONT PERDU, 10,904 f. (*R. these 3 — R. 14 from Kunchinjinga*).

(271.) **Northern Side Ranges of Asia.** — *R. them* (262).

Karakorum Mts. — DAPSANG PEAK, one of the highest of the globe, 28,278 f.

Kuenlun Mts. — No peak.

Thian Shan or Celestial Mts. — TENGRI-KHAN, 20,000 f.

Altai Mts. — PILLARS OF KATOONYA, 12,000 f., BIELUCA, 12,700 f. (*R. these 4 from Karakorum, i. e. Dapsang Peak. — R. 18 from Kunchinjinga*).

(272.) **Southern Side Ranges of Asia.** — *R. them* (263).

Mts. of Indo China. — No peak.

Ghauts. — NEILGHERRIES (neel), 10,000 f. (*R. from Karakorum*).

(273.) **Northern Side Ranges of Europe.** — *R. them* (264).

Carpathian Mts. — No peak.

Mts. of Middle Germany. — No peak.

(Still farther North) *Ural Mts.* — KONJAKOWSKI 5397 f.

Scandinavian Mts. — YMESFIELD, 8500 f.

Mts. of British Isles. — MT. SNOWDON, (Wales), 3590 f., BEN NEVIS, (Scotland), 4368 f. (*R. these 23*).

(274.) **Southern Side Ranges of Europe.** — *R. them (265). For Sec. 274. Pl. VI. B.*

Grecian Mts. — MT. OLYMPUS, 9749 f.

Apennines (Italy). — MONTE CORNO, 9520 f., V. VESUVIUS (near Naples), 3948 f., and V. ETNA (Sicily), 10,875 f. (*R. these 4—R. 8 from Konjakofski*).

Sierra Nevada (Spain). — CERRO MULHACEN, 11,663 f. (*R. 9 from Konjakofski—R. 14 from Karakorum How many? R. 28 from Kunchinjinga*).

(275.) **Mountains of Africa.** — *R. them (266).*

Atlas. — MILTSIN PEAK, 11,400 f.

Mts. of Abyssinia. — ABBA YARED, 15,000 f. (*R. these 2*).

Mts. of the Moon or Snow Mts. (Jebel-el-Komri). — MT. KENIA (ke-ne'-ah), 21,000 f., MT. KILIMANDJARO 20,000 f. This range also called *Dschaga Mts.* (*R. these 2—R. 4 from Miltsin Peak*).

Drakenberg. — COMPASS MOUNTAIN, 10,200 f.

Cameroon Mts. — MT. ALBERT, 13,119 f. (*R. these 2.—6 from Miltsin Peak*).

Kong Mts. — No peak.

Mountains of Air or Asben. — PEAK OF ASBEN, 3—5000 f. (*R. 7 from Miltsin Peak—R. 16 from Carpathian Mts.—from 21 Karakorum—How many? R. 35 from Kunchinjinga*).

Remark. Opinions differ as to the location of *Mountains of the Moon*. Ptolemy, 1700 years ago, described them as covered with eternal snow which formed two lakes—the sources of the Nile; and, after arabian authorities, called them, also, by the now little used term, *Jebel-el-Komri*. But as, notwithstanding reports, we have not yet (April 1867) discovered the sources of the Nile, it is not possible to say *what range Ptolemy meant*. The name is sometimes applied to mountains *west* of Nyanza; but, by the best authorities, to those *east* of that lake—where we have accordingly placed them. The English traveller, Speke

(1858), represented them—but only from report and, it is believed, quite erroneously—as crossing Central Africa, N. of L. Tanganyika.

(276.) Island Mountains, including Australia and Antarctic Continent. —

Island Empire of Japan. — MT. FOOSEEYAMA (Nippon), 12,000 f.

Sumatra. — DEMPO, 10,440 f., SINGALLANG, 10,150 f., OPHIR, 13,000 f. (*R. these 4*).

Java. — VOLCANOES OF JAVA — highest peak SEMEROE, (pr. Semeroo) 12,150 f.

Borneo. — KINIBALOO PEAK, 13,680 f.

Sandwich Is. — (On Hawaii (hā-wi-ee) or Owhyhee, the largest and most southerly). V. MAUNA LOA (mow'-nah-lo'ah), 13,760 f., V. MAUNA KEA, 13,950 f., V. KILAUEA (kil-o-e'-a) 3970 f. (*R. these 9*).

New Zealand. — MT. EGMONT, 8270 f., Mt. Cook, 13,200 f.

Ceylon (see'-lon). — PEDROTALLAGALLA, 8280 f.

Madagascar. — ANKARATRA, 10,000 f. (*R. these 13*).

Cape Verde Is. — V. FOGO, 9157 f.

Canary Is. — PEAK TENERIFFE (PICO DE TEYDE), 12,180 f. (*R. these 15*).

Azores. — PEAK OF PICO (pee-co), 7613 f.

Iceland. — MT. HECLA, 5110 f., MT. OERAEFA-JOKULL, 6,409 f. (*How many from Fooseeyama? R. these 18*.)

(277.) Australia. — Mt. Sea View, 6000 f.; Australian Alps, Mt. Hotham, 7500 f.

Antarctic Continent. — MT. EREBUS, active volcano, 12,367 f., MT. TERROR, 10,884 f. The range has been called ROSS MTS.; near meridian of C. Horn: MT. WILLIAM, 4500 f. (*R. these 3 — R. 23 from Mt. Fooseeyama*).

Remark. *Mt. Kilauea*, notwithstanding its inferior height, is one of the most wonderful volcanoes in the world—not a lofty peak, but rather an upward sloping volcanic

plateau, 4000 feet above the sea, with a crater three miles in diameter and ten miles in circumference—a frightful, unfathomable abyss of ever red and boiling lava, so that it seems to offer a glimpse into the burning central regions of the globe. The surface of this fiery lake is between 500 and 1000 feet below the upper edge of the crater and, seen in the night, is awful beyond description. The *I. Hawaii* itself is wholly volcanic. Its coasts are composed of lava or volcanic cinders, presenting perpendicular overhanging cliffs, worn and broken by the furious billows of the sea and indented with deep caverns inhabited by innumerable birds.

(278.) **Remarks on Mountains.**—No map presents mountains absolutely as they exist in nature, where we seldom find, as it is more convenient to give them in maps, a distinct range like a long wall crossing a plain. What we call a chain is, in fact, a broad mountain region, the whole surface of which has been upheaved, rising gradually to a culminating ridge. Pl. II gives principally these *culminating ridges*. They form the *watersheds*, elevations many hundred miles broad. A glance at Pl. II will show how the rivers flow off on either side from these watersheds. Observe what portion of the globe's surface is occupied by plains and valleys.

(279.) *The Pacific Range*—longest unbroken line of lofty summits on the globe—is, in its whole extent, of volcanic origin, full of extinct craters, intermittent volcanoes and others in constant action. The *Cordilleras of Central America* contain more volcanoes, in frequent eruption, than any other country of equal area, except the antipodal* *Island of Java*. The *volcano Agua*, 15,000 feet, is the highest of Central America. It receives its name from the fact that it emits torrents of hot water and stones, instead of fire. The *Andes*, forming, in some

* Antipodal:—pertaining to the antipodes, or those who have their feet directly opposite ours.

degree, a double chain, after reaching their greatest elevation in *Mt. Aconcagua*, gradually decline in height, as they approach Str. of Magellan, where they are only from 4000 to 7500 feet. They include many magnificent and awful volcanoes. The *Cotopaxi*, 18,875 feet, sometimes shoots flames 3000 feet above its summit, with a roar which, it is said, can be heard at the distance of 550 miles. The region of the Andes is celebrated for the sublime beauty of its scenery and the abundance of mineral riches (gold, silver, copper, lead, iron, etc.). Terrible earthquakes frequently devastate towns and shake the whole adjacent continent. At *Copiapo* (Chili) there is an earthquake almost every day. The cluster of broken rocky islands, on west coast of Patagonian Peninsula, were probably rent from the mainland by convulsions of this nature.— Until recently, MT. ELIAS was supposed the highest point of N. America, and its altitude erroneously given at 27,000 feet. It has lately been measured by the Russians, in their coast survey, and found to be 14,970 feet. The highest peak in N. America, yet measured, is POPOCATEPETLE (Mexico), 17,780 feet. The general elevation of the other Rocky Mountain peaks is supposed to range between 10,000 and 16,000 feet. Some peaks may, however, be higher. Their height is far surpassed by the peaks of S. America. The *Chimborazo*, 21,424 feet, was formerly believed the loftiest in the world. Subsequent measurements have corrected this error. There are at least six higher summits of the Andes; and the *highest* Andes peak, *Aconcagua*, 23,910, is overtopped by *nineteen* known peaks of the *Himalaya*; possibly by many others. MT. WASHINGTON, piled upon the top of ACONCAGUA, would about reach the height of Mt. Everest, 29,000.

We have selected only a few Andes peaks. There are more than 50 stupendous eminences along the chain; and 70, although less high, in N. America; in all more than 120 (without side ranges).

(280.) The Scripture teaches that God *created* the heavens and the earth, and that the latter, before it became the abode of man, had passed through several successive transition periods. Science has attempted to examine into the mysteries of pre-adamic nature, and has discovered many striking facts; but it has made *no progress whatever* toward *explaining* the *original* cause of things. It appears a received idea that the sun, earth, other planets, moons, etc., composing the solar system, were once a mass of gaseous matter, at some time or other ignited, and throwing off fragments, which, gradually, took the shape of *globes* or planets. The central portion became the sun. The burning and perhaps liquid globe of the earth slowly cooled. The surface, or crust appears to have afterward formed one universal ocean, above which, subsequently, arose continents and islands, and, at later successive periods, mountain ranges and peaks. We know little of the interior of our planet. Ten miles is about the greatest depth to which man has ever penetrated; that is, 1—400th (one four-hundredth) of the distance from the surface to the center. But enough is known to force upon us the opinion that the earth is, in fact, *a globe of molten lava*, or other matter so intensely heated as yet to consist of a burning fluid mass. Every where the temperature increases, in proportion as we go deeper, at the rate of about 1° Fahr. for every 55 feet from the surface. This heat, at a depth of 20 or 30 miles, would hold granite in a state of fusion, and dissolve, into a liquid form, the most refractory elements of which the globe is composed. The increase of heat, as we descend, is, generally, regular and uniform.

(281.) Mountains are divided into two classes, *neptunic* and *plutonic*; the former produced by the agency of water; the latter thrown up, at different periods, by fiery eruptions, which burst through the neptunic formations, and gave, to their horizontal strata, different and, sometimes, even perpendicular positions. The

mountains, later thrown up, are the more stupendous, which seems to indicate that planetary convulsions increase in intensity. Among the most recent upheavals are, the Andes with their gigantic peaks — Chimborazo, Aconcagua, etc. In Europe, the Scandinavian Mts. rank among the most ancient, consisting of primary rocks, with the *oldest* deposited strata lying *unbroken* above them. The highest alpine peaks, Mt. Blanc, etc., are the most modern. Science teaches that these changes of nature are not yet at an end; the present repose of the earth is only an interval; and there is some reason to believe that the next planetary crisis may be on a greater scale than its predecessors. The burning central regions are continually in activity as indicated by volcanoes, earthquakes, boiling springs, etc. The bottom of the ocean has volcanoes which sometimes throw up mountain masses and new islands. There are at least 400 volcanoes upon the land, of which more than half are in a state of activity. By far the greater number are found on islands. The surface of some parts of the globe is always rising — for instance, Sweden and other regions around the Baltic. The waters of that sea are continually retiring at about the rate of an inch a year. Lubec, once a sea-port, is now 12 miles from the shore.

(282.) *Volcanoes of Pacific.* — A line of volcanic action extends from Aleutian Is., through Island kingdom of Japan, Philippine Is., Sumatra and Java; in latter island, it reaches its maximum, in about 50 volcanoes. "One of these extinct volcanoes, generally called *Guevo Upas*, or *Vale of Poison*, half a mile round, is held in horror by the natives. Every living creature that enters it, drops down dead, and the soil is covered with carcasses of deer, birds, and even the bones of men, killed by the carbonic acid gas which lies at the bottom of the valley. In another crater, are found the half preserved relics of animals, tigers, birds, innumerable insects, etc. killed by the sulphureous exha-

lations. In the regions of this volcanic line earthquakes are of frequent occurrence causing great devastations, sometimes destroying 23 villages at a time. This was the case in Jesso 1783. A volcano of Kioo-Sioo is the terror of the natives. An eruption (1792) destroyed 50,000 people". In Iceland have occurred the most destructive eruptions on record, their ashes reaching even the Orkney Islands. The *Great Geyser* throws out water sometimes 100 feet high.*

RIVERS.

(PLATE II.)

(283.) Not only the surface of a country, but the size and course of rivers, are determined by mountains, whose flanks absorb the moisture of the atmosphere, forming immense everlasting accumulations of water and ice. Snow peaks and Alpine glaciers are always melting and thus feeding rivers. Ice-masses have been measured, in Switzerland, more than 600 feet deep. These, in their turn, are renewed by the universal and perpetual exhalations from the waters of the globe. Nature has thus established a never ceasing circle of demand and supply. If there were no mountains, there would be few or no rivers. The sublimely beautiful mountain ranges, and the rivers which flow from them, thus obviously belong to a *plan*; for what reasonable mind can fail to see that the earth is a *creation*; that its Creator designed it as the abode of man—that mountains are framed as work-shops of rivers and ornaments of the earth; and that rivers are intended to be features of beauty, sources of fertility, roads of commerce and channels of civilisation. Rivers also exercise important

* Lippencott's valuable "Pronouncing Gazetteer".

influence over political events. They sometimes determine the limits, and modify the destinies, of countries. The Danube, the Rhine, the Main, the Nile, the Mississippi—what parts they have played in the drama of history! The early advances made by Europe out of barbarism and darkness, must be principally ascribed to the configuration of its coasts and the proximity, number and dimensions of its navigable rivers. The water-systems of the United States of America, and the facilities for inland navigation indicate them as the seat of an extensive, pre-eminent civilisation. No part of the globe is more favored with large rivers.

(284.) (W. CONTINENT.)—**Great rivers of N. America.**— Four watersheds— 1. *The first*, leaning toward N., bears the MACKENZIE, SASKATCHEWAN or NELSON and ST. LAWRENCE (with OTTAWA)—into Arctic, Hudson Bay and G. of St. Lawrence. 2. From *second* (S. E. slopes of Alleghany), the HUDSON and numerous others (Pl. VII) flow into Atlantic. 3. The E. slopes of Rocky Mts., W. slopes of Alleghany, and N. table-land W. of great Lakes, form *the third*—the immense basin and valley along which the MISSISSIPPI, swollen by a hundred important branches, sweeps across the vast N. American plain (452) to the G. of Mexico. Among branches are: the RED R., ARKANSAS, MISSOURI, OHIO. The MISSISSIPPI rises in the elevated table-lands of Minnesota State, W. of L. Superior, and enters G. of Mexico, 3000 miles from its source: forming, with the MISSOURI, the longest river of the globe—4350 miles.. The RIO GRANDE DEL NORTE (boundary line between U. States and Mexico), pours, from Rocky Mts. into G. of Mexico. 4. From W. slopes of Rocky Mts., flow, into Pacific—the COLORADO (G. of California)—SACRAMENTO—COLOMBIA—FRAZER—and KWICKPAK or YUCON (latter, into Norton Sound).

(285.) **List of N. American Rivers.** — MACKENZIE — SASKATCHEWAN or NELSON — ST. LAWRENCE, with OTTAWA RIVER — (*R. these 4*). HUDSON — POTOMAC — (*R. these 6*). MISSISSIPPI, with its confluent, RED RIVER — ARKANSAS — MISSOURI — OHIO — (*R. these 5. — R. 11 from Mackenzie*). RIO GRANDE DEL NORTE — RIO COLORADO — (*R. these 2. — R. 13 from Mackenzie*). SACRAMENTO — COLUMBIA — (*R. these 2. — R. from Mackenzie*). FRAZER — KWICKPAK or YUCON. (*R. these 2. How many from Mackenzie — R. these 17*).

(286.) **Great Rivers of S. America.** — The river-basins of S. America are easily distinguished. The MAGDALENA flows into the Caribbean Sea; the ORINOCO and ESSEQUEBO into Atlantic. The great river of S. America, and of the world, the AMAZON or MARAÑON, also empties into Atlantic. It is nearly as long as the Mississippi and Missouri together. Its mighty floods are swollen, on the N., by two affluents: the PUTUMAJO and RIO NEGRO; and on the S. by seven: the UCUYALE (oo-kī-a'-le), PURUS, MADEIRA — TABAJOS, XINGU, and TOCANTINS — with the ARAGUAY. Farther S., the PARANAHYBA, SAN FRANCISCO, PARANA (called, at its mouth, LA PLATA) and its four confluent: URUGUAY — PARAGUAY — PILCOMAYO and SALADO — then the COLORADO and RIO NEGRO, all emptying into Atlantic.

(287.) **List of S. American Rivers.** — MAGDALENA — ORINOCO — ESSEQUEBO — (*R. these 3. — R. 20 from Mackenzie*). AMAZON or MARAÑON (mah-rahm-yown') — two northern branches: PUTUMAJO — RIO NEGRO — (*R. these 3. — R. 23 from Mackenzie*). Seven southern confluent: UCAYALE, PURUS, MADEIRA, TABAJOS, XINGU, TOCANTINS with ARAGUAY — (*R. these 7. — Read Amazon with its 9 confluent — R. 30 from Mackenzie*). PARANAHYBA and SAN FRANCISCO — (*R. these 2. — R. 15 from Magdalena — R. 32 from Mackenzie*). LA PLATA (PARANA)

with SALADO, PILCOMAYO, PARAGUAY, URUGUAY (*R. these 5 — R. from Magdalena — R. from Mackenzie*). COLORADO and RIO NEGRO (*R. these 2. — How many from Magdalena — R. these 22 rivers of S. America — How many from Mackenzie — R. 39 rivers of America.*)

(288.) *Remark.* The rivers of W. Continent are in general larger than those of E. Continent. The MISSOURI presents two natural curiosities. At about 400 miles from its source it passes through the gates of the Rocky Mts., a ravine 150 yards wide and 6 miles long, between rocks about 1200 feet high, rising perpendicularly from the water's edge. A little more than 1500 miles from its source, it descends 357 feet in $16\frac{1}{2}$ miles, in a succession of falls, one of which is 87 feet. These falls, next to Niagara, are considered the greatest in N. America.

While the Mississippi, with the Missouri, is the longest, the Amazon is the largest river of the globe. It bears the immense floods of the Andes, from the interior of Peru, along the almost entire breadth of the continent—a distance of 4000 miles—to its two great mouths on the equator; emptying into the Atlantic the drainage of more than half S. America. So great are its volume and impetuosity, that it projects its turbid current into the sea more than 200 miles from the coast.

Porroca or bore. — The waters of the Atlantic occasion a singular phenomenon so called. Two days after, and two days before, every full moon, the ocean-tide, entering the river, is met by the descending river-flood sweeping out toward the sea. A struggle ensues. The river is sufficiently powerful to contest, for a time, the advance of its mighty opponent; but in a few minutes, the latter, the whole Atlantic behind it, accumulates a mass which overcomes all resistance—bears down the out rushing flood, rolls over it in a broad billow, 12 to 20 feet high, and advances up the river, with a roar audible at a distance of 7 miles. Behind

it, the *pororoca* leaves the river to continue quietly its way; but it is very dangerous to vessels in its onward course. Hence the Indian name of the river, *Amassona*, signifying "boat destroyer." As the entering wave advances, it almost entirely subsides in the deepest points of the river. These places are called *Esperas* (waiting places), because the smallest vessels lie there secure.

(289.) (E. CONTINENT.) From Behring Str. to Str. of Malacca. — AMOOR, into Sea of Okhotsk — HOANG-HO — YANG-TSE-KIANG, into Yellow Sea — (*R. these 3*). MEKONG OR CAMBODIA, into Pacific — (*How many? — R. these 4 from Amoor*).

(290.) From Str. of Malacca to Red Sea. — IRRAWADDY — BRAHMAPOOTRA — GANGES — GODAVERY — into B. of Bengal — (*R. these 4*). — NERBUDDA — INDUS — with tributary SUTLEJ into Arabian Sea — (*R. these 3 — R. from Amoor*). TIGRIS — EUPHRATES into Persian Gulf — (*R. these 9. — R. 13 from Behring St. i. e. Amoor R.*).

(291.) From Red Sea, quite around Africa, to Str. of Gibraltar. — NILE — (with its branches WHITE and BLUE NILE) into Mediterranean — JUBA RIVER into Indian Ocean — ZAMBEZI (*zam-bai'-zee*) into Mozambique Channel — (*R. these 5. — R. 18 from Behring St.*). ORANGE R. — COANZA R. — CONGO OR ZAIRE into Atlantic — (*R. these 3. — R. from Nile*). OGABAI — GABOON — NIGER (JOLIBA OR QUORRA) with the newly discovered BENUÉ into G. of Guinea — (*R. these 4. — R. from Nile*). GAMBIA — SENEGAL — WADI DRAA into Atlantic — (*R. these 3. — R. 15 from Nile*). Interior: SHARY and other tributaries into *L. Tsad* — (*How many? — R. these 16 from Nile — R. 29 from Behring Str.*).

(292.) From Str. of Gibraltar to Danish Peninsula. — (Spanish Peninsula): GUADALQUIVIR — GUADIANA — TAGUS, into Atlantic. — (*R. these 3*). DOURO

—MINHO (meen-yo), into Atlantic — (France): GARONNE — GIRONDE — LOIRE, into B. of Biscay — (*R. these 5. — R. 8 from Guadalquivir*). SEINE, into English Channel — (Gr. Britain): THAMES, into German or North Sea — (*R. these 2. — R. 10 from Guadalquivir*). (Northern Europe): RHINE — WESER — ELBE, into North Sea. (*How many? — R. these 13 from Guadalquivir — R. 42 from Behring Str.*).

(293.) **Rivers emptying into Baltic.** — ODER — VISTULA — NIEMEN — (*R. these 3*). DUNA — NEVA — TORNEA. (*How many? — R. these 6 — R. 19 from Guadalquivir, adding rivers emptying into Baltic — R. 48 from Behring Str.*).

(294.) **From North Cape to Behring Str.** — DWINA, into White Sea; PETSCHORA, into Arctic Ocean (*R. these 2*). OBI, into G. of Obi; IRTISH, into Obi River; YENISEI (with its tributary TOONGOOSKA or ANGARA) flowing through L. Baikal into Arctic. (*R. these 4. — R. from Dwina*).

LENA, KOLYMA, into Arctic. *How many? R. these 8 from Dwina — R. 27 from Guadalquivir — R. 56 from Behring Str.*

Remark. The Dwina and Petschora are in Europe — the other 6 in Asia.

(295.) **Rivers emptying into Mediterranean.** — EBRO, RHONE, PO. (*How many? R. these 3*).

(296.) **Into Black Sea.** — DANUBE, PRUTH, DNIESTER (nees'-ter), DNIEPER (nee'-per) — (*R. these 4. — R. from Ebro*).

(297.) **Into Sea of Azof.** — DON, — (*How many from Ebro? R. these 8*).

(298.) **Into Caspian Sea.** — VOLGA, URAL. — (*R. these 2. — How many from Ebro? — R. these 10*).

(299.) **Into Sea of Aral.** — **SIR-DARIA** (ancient *Jaxartes*), **AMO-DARIA** (ancient *Oxus*). — (*R. these 2.* — *How many from Ebro?* — *R. these 12.*)

(300.) **Rivers of Australia.** — **GOOLWA** or **MURRAY**, with its tributary the **DARLING**, into Southern Ocean. (*Now R. rivers of the world.*)

(301.) **Orthography — Pronunciation — Mountain Heights** — present difficulties, as indeed, in many cases, do the names themselves. The natives of a country have often a name or pronunciation quite dissimilar from that adopted by other nations, who moreover differ among themselves. Authorities of the same nation disagree. To reconcile these conflicting standards is simply impossible. The student must not be surprised to find broad differences, as he advances in geographical reading. In order to accustom him to them, we have occasionally, in different places, given a different spelling to the same word. The *name* is sometimes scarcely recognizable; as for instance, *Mt. Kilimandjaro*, in *Kilima Ndscharo*. Mountain heights are, also, often most loosely and incorrectly given. We have, as far as possible, followed Berghaus' list of one hundred measured heights, just published at Gotha, in the *Geographisches Jahrbuch for 1866*, by Justus Perthes. Aconcagua is generally allowed to be the highest point of America. But measurements, particularly of Aconcagua, do not agree. One even gives the pre-eminence to Sahama.

(302.) **Questions.** — What is a continent? (121) — island? (122) — island-chain? (123) — peninsula? (124) — isthmus? (126) — cape? (128) — promontory? (129) — mountain? (130) — mountain-range, or ridge, or chain? (131) — mountain-system? (132) — peak? (133) — volcano? (134) — ocean? (153) — river? (170) — source or head of a river? (170) — mouth of river? (170) — river-channel? (170) — bed of river? (170) — right bank — left bank of a river? (170) — tributary, affluent, branch of a river? (172) — fork of a river? (172, also 152) — wady? (178).

PART III.

POLITICAL GEOGRAPHY.

COUNTRIES.

(PLATE III.)

(303.) **Political Divisions of N. America.** — By "N. America" we mean, not only the continent, but all the adjoining insular landmasses. Farthest to the N., we have:

DANISH AMERICA, consisting of GREENLAND and ICELAND. Denmark owns also 3 West India Is. — SANTA CRUZ, ST. THOMAS and SAN JUAN. (for *Santa Cruz*, see Pl. III. fig. 3).

UNOCCUPIED ARCTIC LANDS, without any regular government because without population, except a few wandering Esquimaux tribes, cannot be called either a colony, or a political division.

RUSSIAN AMERICA, now a territory of U. S. of Am.

BRITISH AMERICA consists not only of that immense colony N. of United States — nearly the size of the continent of Europe, but also, on Isthmus of Central America, of BALIZE OR BRITISH HONDURAS, and BRITISH WEST INDIES (216. Pl. III. fig. 3); to which add the BERMUDAS OR SOMERS IS. in Atlantic.

FRENCH AMERICA. France, which once owned nearly all N. America, now possesses only those small islands, S. of Newfoundland, namely: ST. PIERRE and

MIQUELON—called FRENCH FISHERY IS.; and FRENCH WEST INDIES (216. Pl. III. fig. 3).

REP. OF UNITED STATES OF AMERICA.

REP. OF MEXICO. We call this beautiful and unfortunate country *a republic*, although its government is subject to frequent changes, through one of the most remarkable of which it is now passing.

FIVE INDEPENDENT REPUBLICS OF CENTRAL AMERICA (see them on a larger scale, Pl. III. corner-map, fig. 2), namely: GUATEMALA—ST. SALVADOR—HONDURAS—NICARAGUA—and COSTA RICA.

MOSQUITO COAST (For the following five see Pl. III. fig. 3).

SPANISH AMERICA—CUBA and OTHER WEST INDIAN IS.

REP. OF HAYTI.

REP. OF SAN DOMINGO, the latter sometimes called DOMINICAN REPUBLIC. These are two independent negro republics, on an island bearing three different names: *Hayti*, *San Domingo* and *Hispaniola*. The entire population, 600,000, is black, except about 28,000.

SWEDISH WEST INDIES.

DUTCH WEST INDIES.

(304.) *Remark.* 1. *Central America* is not a political division, but a name vaguely given to a part of the Isthmus. The five republics, in 1823, formed a so-called Confederation, which broke up in 1839.

2. *Mosquito Coast*, is an unsettled country occupied by Indians, whose Chief calls himself *King of Mosquitia*.

3. *Plate III.* is a reproduction of Pl. II. on the same scale. The water divisions, lakes, islands, peninsulas, capes, mountain-chains, etc., will be found, but more lightly drawn, and *without their names*. The pupil, having already, by a series of ascending steps, familiarized himself with them, comprehends, *at a glance*, the general configuration of a country, its rivers, mountains, etc., and takes in, *by the eye*, a variety of circumstances. The United States of America, for example: the Mississippi and its branches and valleys, the Colorado and Colombia Rivers, the Rocky Mts., Alle-

ghanies, etc., present themselves, in their relative positions, far more clearly to his mind, than could be the case if the map were crowded with the usual confusion of names, or if the lists were to be studied from the book. A reference to Pl. II. will assist his memory in case of need.

We use the word *country* to indicate the whole territory of a republic, kingdom or other independent state; as, UNITED STATES OF AMERICA, FRANCE, etc. In a few instances, for the sake of convenience, under this name, are classified divisions which are *not* independent countries; as, BRITISH AMERICA, FRENCH FISHERY IS., HINDOSTAN OR BRITISH INDIA, etc.

(305.) (W. CONTINENT.) — **Countries of N. America**, — DANISH AMERICA—UNOCCUPIED ARCTIC LANDS—RUSSIAN AMERICA—(*R. these 3*). BRITISH AMERICA, with BALIZE OR BRITISH HONDURAS, etc.—FRENCH AMERICA—REP. OF UNITED STATES — (*R. these 3*.—*R. from Danish America*). REP. OF MEXICO—FIVE INDEPENDENT REPUBLICS OF CENTRAL AMERICA, namely: GUATEMALA—ST. SALVADOR—HONDURAS—NICARAGUA—and COSTA RICA—MOSQUITO COAST—(*R. these 6*.—*R. from Danish America*). SPANISH AMERICA—REP. OF HAYTI—REP. OF SAN DOMINGO (*R. these 3*.—*R. from Danish America*)—SWEDISH WEST INDIES—DUTCH WEST INDIES. (*How many? R. these 19*.)

(306.) **Countries of S. America**. — REP. OF COLUMBIA, or Colombia, (formerly New Granada)—REP. OF VENEZUELA (ven-ez-wee'la)—(*R. these 2*). COLONIES OF GUIANA, namely: ENGLISH GUIANA—DUTCH GUIANA OR SURINAM—FRENCH GUIANA OR CAYENNE—(*R. these 3*.—*R. from Colombia*). EMPIRE OF BRAZIL—REP. OF PARAGUAY (pa-ra-gwi')—REP. OF URUGUAY (oo-roo-gwi'), formerly ORIENTAL REPUBLIC OR BANDA ORIENTAL, — (*R. these 3*.—*R. from Colombia*). ARGENTINE CONFEDERATION (ar'jen-teen), or STATES OF LA PLATA, including BUENOS AYRES (bwā'-noce-ires)—PATAGONIA—REP. OF CHILI — (*R. these 3*.—*R. from Colombia*). REP. OF BOLIVIA—REP. OF

PERU—REP. OF ECUADOR (*R. these 3.—How many from Colombia?—R. these 15.—R. from Danish America*).

(307.) *Remark.* All independent organized countries of N. and S. America are republics, except Brazil. Patagonia, is not an organized government. It has no cities. The inhabitants are nearly savage and among the lowest of the earth. Attempts have been frequently made, particularly by Chili, to form settlements on the coasts and adjacent islands, but with little success.

(308.) (E. CONTINENT.) — **Countries of Europe** — divided into two groups:

Those on, or near, North Sea and Baltic — UNITED KINGDOM OF GREAT BRITAIN AND IRELAND — UNITED KINGDOM OF SWEDEN AND NORWAY — EMPIRE OF RUSSIA IN EUROPE — (*R. these 3*). GERMANY — KINGDOM OF BELGIUM — KINGDOM OF HOLLAND — (*R. these 3.—R. from Gr. Britain*). KINGDOM OF DENMARK. (*How many? R. these 7*).

Those on, or near, Mediterranean — KINGDOM OF PORTUGAL — KINGDOM OF SPAIN — EMPIRE OF FRANCE. (*R. these 3.—R. from Gr. Britain*). REP. OF SWITZERLAND — KINGDOM OF ITALY — PAPAL TERRITORY — (*R. these 3.—R. from Gr. Britain*). EMPIRE OF AUSTRIA — ROUMANIA, OR DANUBIAN PRINCIPALITIES — EMPIRE OF TURKEY IN EUROPE. (*R. these 3.—R. from Gr. Britain*). KINGDOM OF GREECE. — (*How many from Portugal?—R. these 10.—How many from Gr. Britain?—R. these 17*).

ANDORRA—SAN MARINO. Two very small, so-called independent republics, one — Rep. of Andorra — in Pyrenees, between France and Spain; the other — San Marino — in Italy. — (*R. these 19 from Gr. Britain*.)

(309.) *Remark.* 1. GERMANY — until 1866, formed one league, called the *Germanic Confederation*. In that year, the growing struggle for supremacy, of the two principal states of the Confederation — Prussia and Austria — led to a war which resulted in the enlargement and aggrandizement of Prussia,

and the complete exclusion of Austria from Germany. In Plates III and IV, we give merely the frontier lines of Germany without Austria. For Germany or the German States, as at present constructed, see Pl. VI. B.

2. *Monaco* — formerly an independent principality — was, in 1860, mediatized by France, and now forms part of her dominions.

(310.) **Countries of Asia** — divided into six groups:

On Mediterranean — TURKEY IN ASIA.

On Red Sea. — ARABIAN STATES, WITH KINGDOM OF THE WAHABEES AND MUSCAT. (*R. 4 from Turkey in Asia*).

On Indian Ocean with Persian Gulf. — ARABIAN STATES, WITH KINGDOM OF WAHABEES AND MUSCAT — PERSIA — BELOOCHISTAN — HINDOSTAN OR BRITISH INDIA — THE INDO-CHINESE STATES, consisting of BIRMAN EMPIRE — EMPIRE OF ANAM — EMPIRE OF SIAM and MALAY STATES — (*R. these — R. from Turkey in Asia*).

On Pacific. — INDO-CHINESE STATES, consisting of BIRMAN EMPIRE — EMPIRE OF ANAM (COCHINCHINA) — EMPIRE OF SIAM — MALAY STATES — CHINESE EMPIRE, consisting of CHINA PROPER, EASTERN TOORKISTAN, MONGOLIA and MANTCHOORIA — (*R. from Indo-Chinese States — R. from Arabian States — R. from Turkey in Asia*). KINGDOM OF COREA (ko-ree'a) — ISLAND EMPIRE OF JAPAN. (*How many from Indo-Chinese States? — R. these. How many from Turkey in Asia? — R. these*).

Arctic Ocean. — RUSSIA IN ASIA, OR SIBERIA (*R. from Indo-Chinese States — from Arabian States — from Turkey in Asia*).

Interior States. — WESTERN TARTARY OR TOORKISTAN — AFGHAN STATES — (*R. these 2*). CASHMERE — NEPAUL (ne-pawl'), — BOOTAN — (*R. these 3 — R. from Turkey in Asia*). THIBET — (*How many in Asia? R. these 19*).

(311.) *Remark.* THIBET and COREA are often given as parts of the Chinese Empire. We have thought it more

proper to place them among independent states. Indeed the Chinese, like the Turkish Empire, seems to be falling to pieces. THIBET is one of the most elevated countries of the earth; its plains average from 10,000 to 11,000 feet above the sea.

(312.) **Countries of Africa.** — We now consider the countries of Africa in five groups.

On Mediterranean. — EMPIRE OF MOROCCO WITH TUAT—ALGERIA—TUNIS—TRIPOLI, with FEZZAN and BARCA—(*R. these 7*.) EGYPTIAN STATES, including EGYPT PROPER—NUBIA—KORDOFAN, etc. — (*R. these 3 — R. 10 from Morocco*).

(313.) *Remark.* 1. Four of the above — viz. *Morocco (with Tuat), Algeria, Tunis, Tripoli (with Barca and Fezzan)* are called BARBARY STATES — sometimes BARBARY; (from *Berber* — the name of a people who once inhabited this region). 2. *Algeria* has been a french colony since 1830. 3. *Tunis and Tripoli* are dependencies of the *Ottoman Porte*, or, as the Turkish Government is officially called, the *Sublime Porte* (from the gate of the Sultan's palace, where justice is administered). 4. Of the *Egyptian States*, only *Egypt Proper* is washed by the Mediterranean.

(314.) *On Red Sea and G. of Aden.* — EGYPTIAN STATES including EGYPT PROPER, NUBIA, KORDOFAN, etc. — EMPIRE OF HABESH OR ABYSSINIA—SOMAUJI (*so-maw'-lee*) and GALLA COUNTRY. (*R. these 6*).

On Indian Ocean. — SOMAUJI and GALLA COUNTRY — SUAHILI COAST OF ZANZIBAR — (*R. these 3 — R. from Morocco*). ISLAND KINGDOM OF MADAGASCAR — PORTUGUESE COLONIES OF SOFALA AND MOZAMBIQUE — (*R. these 3 — R. from Somauli — R. from Morocco*). ZOOLOO COUNTRY — CAPE COLONY, with NATAL, and KAFFRARIA (British Possessions). (*R. these 4 — R. from Somauli — R. from Morocco*).

On Atlantic. — CAPE COLONY — LAND OF THE DEMARA AND NAMAQUA, including THE HOTTENTOT COUNTRY. (*R. these 3 — R. from Morocco*). LOWER GUINEA, consisting of BENGUELA — ANGOLA — CONGO —

LOANGO-BIAFRA (*R. these 5.—R. from Cape Colony—R. from Morocco*). UPPER GUINEA, including CALABAR COAST—SLAVE COAST—GOLD COAST—IVORY COAST—GRAIN COAST. (*R. these 5—R. from Morocco*). In Upper Guinea are the three kingdoms BENIN (*ben-een'*), DAHOMEY and ASHANTEE. (*R. these 3.—how many of Upper Guinea? R. these 8—R. from Cape Colony. R. from Morocco*). NEGRO REPUBLIC OF LIBERIA—SIERRA LEONE (British settlement). (*R. these 2—R. from Cape Colony—from Morocco*). SENEGAMBIA, comprising MANDINGO COUNTRY, FOOLAH COUNTRY, JOLOF COUNTRY, and some commercial posts of the English, French and Portuguese (*R. these 4. R. from Cape Colony—R. from Morocco*). GREAT DESERT OF SAHARA, inhabited principally by Tooareks and Tibboos (*R. this—R. from Cape Colony—R. from Morocco*).

Interior Countries.—SOUDAN, OR LAND OF THE BLACKS (called by former geographers, NIGRITIA or ETHIOPIA), consisting of various independent mahometan and negro states. (*R. this—R. from Cape Colony*). UNEXPLORED CENTRAL REGIONS OF AFRICA (by some geographers improperly called ETHIOPIA) (*and farther S.*), EMPIRES OF THE MUROPUE AND CAZEMBE, consisting principally of the powerful *Mohua* or *Loonda* tribes—(*Still farther S. and adjoining Cape Colony*) LAND OF THE BECHUANAS—ORANGE REP.—TRANSVAAL REP.—(*R. these 3.—R. from Soudan—R. from Cape Colony—from Morocco—then countries of W. Continent—of E. Continent*).

(315.) *Remark.* 1. The name *Hottentot* is not known in Africa. The tribe so-called is included under the name of *Namaqua*.

2. *Sahara* is partly occupied by Moors (Arabs). The *Tibboos* are pagans somewhat resembling the negro. The *Tooareks* are mahometans.

3. Although *Soudan* is called *Land of the Blacks*, we must not think the blacks are confined to that land. The negro or black race are supposed to amount to 50 or 60 millions. They are found throughout a great part of

southern Africa, and comprise many shades of color and physiognomical varieties. Pop. of Africa, 188 millions.

4. The above political divisions of Africa give only a selection from innumerable tribes, kingdoms, and countries, many imperfectly, some not at all known.

5. The interior boundary lines are intended to aid the eye. It is not possible to draw them always accurately. In some cases they do not exist at all.

(316.) *Ethiopia* — a name vaguely applied by ancient geographers, sometimes to all the southern parts of the known world; sometimes to India; sometimes to those regions of Asia and Africa whose inhabitants were of black or dark color; sometimes to that entire portion of Africa S. of the Atlas and Egypt. It belonged more particularly to that ancient kingdom, called *Meroe* (mer'-o-e) of northern Africa, with a capital of the same name, whose ruins are yet to be seen on the banks of the Nile. This people were negroes, and Herodotus remarks that this was the only country of antiquity where men of color made great progress in civilisation. Their constitution, government, laws and religion were of a high order. The king was amenable to the law as the lowest of his subjects. Some writers even give to Meroe the honor of having been the parent of Egyptian civilisation. Meroe, the capital, was the great center of commerce between Ethiopia, Egypt, Arabia, northern Africa and the Indies. Its inhabitants founded Thebes. The kingdom appears to have been at the head of a number of other Ethiopian kingdoms. Ethiopia and Ethiopians are frequently mentioned in the Bible. "Ahasuerus reigned from India to Ethiopia".—Job, perhaps the most ancient book, says, "The topaz of Ethiopia shall not equal it".—"Can the Ethiopian change his skin or the leopard his spots"? This last passage seems to identify Ethiopia with the negro race. A passage of Ps. LXVIII appears to indicate that the negro people shall one day be converted to the God of the Bible.—"Ethiopia shall soon stretch out her hands unto God". Another passage in Acts VIII, 26—39, concerning "a man of Ethiopia", is regarded by many as the first step toward the fulfilment of this prophecy. There is now no country, Ethiopia, except *Abyssinia* or *Habesh*, which is governed by a sovereign, calling himself *Theodore I, Emperor of Ethiopia*.

COLONIES.

(PLATE III.)

(317.) **Colonies of Great Britain.** — The foreign British Possessions are:

(In America): The northern half of north american continent, generally called **BRITISH AMERICA**, with **VANCOUVER I. — NEWFOUNDLAND**, etc. **BALIZE** or **BRITISH HONDURAS — BERMUDA** or **SOMERS IS.** — (*R. these.*) **BRITISH WEST INDIES — BRITISH GUIANA — FALKLANDS IS.** (*R. these 3 — R. from British America.*)

(In Europe): **HELIGOLAND — GIBRALTAR — MALTA** — (*R. these 3 — R. from British America.*)

(In Asia): **ADEN**, a strongly fortified sea-port in **Arabia — BRITISH INDIA — CEYLON — HONG-KONG I.** — (*R. these 4 — R. from British America.*)

(In Africa): **GAMBIA — SIERRA LEONE — GOLD COAST POSSESSIONS** — (*R. these 3*). **ASCENSION I. — ST. HELENA — CAPE COLONY**, with **NATAL** and **BRITISH KAFFRARIA** (*R. these 5 — R. from Gambia*). **MAURITIUS — AMIRANTE**, and **SEYCHELLES**. (*How many from Gambia? R. these 11 — R. from British America.*)

(In Oceania): **AUSTRALIA — TASMANIA — NEW ZEALAND** — (*R. these 3*). **AUCKLAND ISLES** (*S. of New Zealand*). — **NORFOLK I.** (*N. W. of New Zealand — How many in Oceania? R. these 5 — R. from British America.*)

Australia consists of six colonies: **WESTERN AUSTRALIA — PRINCE ALBERT LAND — QUEEN'S LAND** — (*R. these 3*). — **NEW SOUTH WALES — VICTORIA — SOUTH AUSTRALIA** — (*R. these 6*) — to which may be added the colonies of **TASMANIA** and **NEW ZEALAND**. *How many? R. these 8. — R. from British America.*

(318.) **Colonies of Holland.** — (*In America*): **DUTCH WEST INDIES — GUIANA** or **SURINAM** (*R. these 2*).

(In Asia): Nearly ALL MALAYSIA, including SUMATRA—JAVA—BORNEO—CELEBES, etc.—and a PART OF PAPUA OR NEW GUINEA—(*R. — then from Dutch West Indies*).

(In Africa): SETTLEMENTS ON THE GUINEA COAST (*How many from Dutch W. Indies? — R. these 9 — R. from Colonies of Gr. Britain.*

(319.) **Colonies of Denmark.** — (In America): GREENLAND—ICELAND—DANISH WEST INDIES—(*R. these 3*).

(In Europe): FAROE IS. (*How many? R. these 4 — R. all British and Dutch colonies*).

(320.) **Colonies of Portugal.** — (In Atlantic): AZORES—MADEIRA—CAPE VERD IS. (*R. these 3*).

(In Africa): SOFALA AND MOZAMBIQUE—ANGOLA—BENGUELA, etc. (*R. these 4 — R. from Azores*).

(In Asia): GOA, etc.—SETTLEMENTS IN MALAYSIA OR MALAY ARCHIPELAGO—MACAO—(*How many? R. these 10 — R. all colonies of Gr. Britain — Holland — Denmark and Portugal*).

(321.) **Colonies of Spain.** — (In America): SPANISH WEST INDIES.

(In Atlantic): CANARY IS.

(In Mediterranean): BALEARIC IS. (*R. these 3*).

(In Africa): CEUTA, (on Barbary Coast).

(In Oceania): PART OF PHILIPPINE IS.—PART OF LADRONE IS. (*How many? R. these 6. R. all colonies of Gr. Britain — Holland — Denmark — Portugal — Spain*).

(322.) **Colonies of France.** — (In America): FRENCH FISHERY IS.—FRENCH WEST INDIES—FRENCH GUIANA OR CAYENNE. (*R. these 3*).

(In Europe): CORSICA.

(In Asia): PONDICHERY (Coromandel Coast), etc.

(In Africa): ALGERIA—SENEGAL, etc. — I. OF

BOURBON, or RÉUNION (Indian Ocean — *R. these 5.* — *R. from French Fishery Is.*).

(In Oceania): TAHITI (*Society Is.*) — MARQUESAS — NEW CALEDONIA, etc. (*How many from French Fishery Is.? — R. these 12. — R. all colonies thus far learned.*).

TOWNS.

(PLATE IV.)

(323.) *Remark.* Plates II and III have now made us familiar with the chief natural land and water divisions, and with the countries, of the globe. Plate IV, although Mercator's projection, is a *reproduction* of Plates II and III, for the purpose of presenting an *unconfused view* of towns, with no other names than a few in the Arctic regions, required by a future lesson, and for which there was no room in Pl. II.

The outline selected is intended, as far as practicable, to embrace the *capital*, the *great sea*, *lake* or *river-port*, and one or two others, interesting as centers of trade or manufacture, or on any other account. For instance, *Hillah*, site of ancient Babylon. With the view to aid the memory, the towns are given, in the text, not in the order of their importance, but in the order in which they lie; and with few remarks. The United States of America and Southern and Western Europe are given on a larger scale in Plates VI. VII. The words "no town" mean no town proper for our outline-list.

(324.) (W. CONTINENT.) — **Towns of Danish America** — GODTHAAB (*Greenland*) — REIKIAVIK (*Iceland*) — CHRISTIANSTADT — (*Santa Cruz, West Indies* — *R. these 3*).

(325.) **Unoccupied Arctic Lands.** — No town; only temporary snow-huts of wandering Esquimaux.

(326.) **The so-called Russian America.** — NEW ARCHANGEL (on *Sitka I.*—*R. from Godthaab*).

(327.) **British America.** — ST. JOHN—HALIFAX—QUEBEC (*R. these 3*). MONTREAL—OTTAWA—FORT YORK — (*R. these 3—R. from St. John*). FORT GARRY (*Red River Settlement*)—NEW WESTMINSTER (on *Frazer River*)—VICTORIA (on *Vancouver Is.*) (*R. these 3—R. from St. John*). BALIZE (*Balize, or British Honduras*)—KINGSTON (*Jamaica*)—HAMILTON (*Bermudas*). (*R. these 3—R. from St. John—then from Godthaab*).

(328.) **French America.** — On French Fishery Is. no town.—ST. PIERRE (*Martinique, West Indies*). (*R. from Godthaab*).

(329.) **United States of America.** — (On Atlantic): PORTLAND—BOSTON—NEW YORK—(*R. these 3*). PHILADELPHIA—BALTIMORE—WASHINGTON—(*R. these 3—R. from Portland*). RICHMOND—WILMINGTON—CHARLESTON (*R. these 3—R. from Portland*). SAVANNAH—ST. AUGUSTIN—KEY WEST (on the island—*R. these 3—R. from Portland*). (On G. of Mexico): KEY WEST—MOBILE—NEW ORLEANS (*R. these 3—R. from Portland*). GALVESTON (*gal'ves-ton*)—BROWNSVILLE (*R. these 2—R. from Portland*). (On or near Pacific): SAN FRANCISCO—SACRAMENTO—SALEM—(*R. these 3—R. from Portland*). OREGON CITY—OLYMPIA (*R. these 2—R. from Portland*). (On Mississippi R.): NEW ORLEANS—BATON ROUGE—VICKSBURG (*R. these 3—R. from Portland*). MEMPHIS—ST. LOUIS (*R. these 2—R. 5. on Mississippi—R. from Portland*). (On Ohio R.): LOUISVILLE—CINCINNATI—(*R. these 2—R. from New Orleans—R. from Portland*). (Lake Towns): MILWAUKEE—CHICAGO (*L. Mich.*)—DETROIT—(*R. these 3*). CLEVELAND—BUFFALO (*L. Erie*) (*R. these 5—R. from Portland*). (Interior Towns): SALT LAKE CITY—AUSTIN (*R. these 2—R. from Portland*).

(330.) **Mexico.** — MATAMORAS — VERA CRUZ — MEXICO — MAZATLAN (*R. these 4 — R. from Godthaab*).

(331.) **Five Independent Republics of Central America** (Pls. III. fig. 2). — GUATEMALA (*Guatemala*) — ST. SALVADOR (*St. Salvador*) — (*R. these 2*) COMAYUGA — TRUXILLO — OMOA (*in Honduras*). The latter is said to be the hottest point in the New World, except perhaps French Cayenne. (*R. these 3 — R. from Guatemala*). ST. JUAN DE NICARAGUA, OR GREYTOWN (*Nicaragua*) — SAN JOSÉ — PUNTA ARENAS (*Costa Rica*). (*R. these 3. — R. from Guatemala*).

(332.) **Mosquito Coast.** — BLUEFIELDS.

(333.) **Spanish America:** HAVANA (*Cuba*) (*R. these 2 — R. from Portland — R. from Godthaab*).

(334.) **L Hayti.** — PORT AU PRINCE (*Rep. of Hayti*) — SAN DOMINGO (*Rep. of San Domingo*). (*R. these 2 — R. from Godthaab*).

(335.) **Swedish America.** — GUSTAVIA (*St. Bartholomew*).

(336.) **Dutch America.** — WILLIAMSTADT (*Curaçoa*). (*R. these 2 — R. from Godthaab*).

(337.) **Colombia.** — ASPINWALL — PANAMA — BOGOTA. (*R. these 3*).

(338.) **Venezuela.** — CARACAS, with its port LA GUAYRA — (*R. these 2 — R. from Aspinwall*).

(339.) **Colonies of Guiana.** — GEORGETOWN (*English Guiana*) — PARAMARIBO (*Dutch Guiana*) — CAYENNE (*French Guiana*). (*R. these 3 — R. from Aspinwall*).

- (340.) **Brazil.** — PARA — MARANHAM — PERNAMBUCO (*R. these 3*). BAHIA, OR ST. SALVADOR — RIO JANEIRO — OURO PRETO (formerly Villa Franca). (*R. these 3*) — *R. from Para* — *R. from Aspinwall*). GOYAZ — CUJABA (*R. these 2* — *R. from Para* — *R. from Aspinwall*).
- (341.) **Paraguay.** — ASUNCION OR ASSUMPTION — VILLA RICA. (*R. these 2* — *R. from Para*).
- (342.) **Uruguay.** — MONTE VIDEO. (*R. from Asuncion* — *from Aspinwall*).
- (343.) **Argentine Confederation.** — BUENOS AYRES — ROSARIO — CORRIENTES — (*R. these 3* — *then from Aspinwall*).
- (344.) **Patagonia.** — No town.
- (345.) **Chili.** — VALDIVIA — SANTIAGO — VALPARAISO — COPIAPO. (*R. these 4* — *R. from Aspinwall*).
- (346.) **Bolivia.** — COBYA — CHUQUISACA — LA PAZ. (*R. these 3*. *R. from Aspinwall*).
- (347.) **Peru.** — LIMA, with its port CALLAO — (*R. these 2* — *R. from Aspinwall*).
- (348.) **Ecuador.** — GUAYAQUIL, QUITO. — (*R. these 2* — *then from Aspinwall* — *then from Godthaab*).
- (349.) (E. CONTINENT.) — **Towns of Great Britain and Ireland.** — (England) BRISTOL — LONDON — LIVERPOOL — (*R. these 3*). (Scotland) GLASGOW, EDINBURGH, DUNDEE — (*R. these 3* — *R. from Bristol*). (Ireland) CORK — DUBLIN — BELFAST. (*R. these 3*. *How many from Bristol?* *R. these 9*).

(350.) **Sweden and Norway.** — (Sweden) **GOTHENBURG** — **STOCKHOLM** — **UPSALA.** (*R. these 3*). (Norway) **CHRISTIANIA** — **BERGEN** — **DRONTHEIM** — **HAMMERFEST.** (*How many from Gothenburg? R. these 7. R. from Bristol.*)

(351.) **Russia in Europe.** — **TORNEA** — **ARCH-ANGEL** — **ST. PETERSBURG.** (*R. these 3*). **REVAL** — **RIGA** — **WARSAW** — (*R. these 3. R. from Tornea*). **KIEV** — **ODESSA** — **SEBASTO'PLE** (pronounced like Constantinople). (*R. these 3—R. from Tornea*). **ASTRACHAN** — **KASAN** — **NISHNEI-NOVGOROD** — (*R. these 3—R. from Tornea*). **MOSCOW** — (*How many from Tornea? R. these 13. R. from Bristol.*)

(352.) **Germany.** — **BREMEN** — **HAMBURG** — **HAN-OVER** — (*R. these 3*). **BERLIN** — **KOENIGSBERG** — **DRESDEN** — (*R. these 3—R. from Bremen*). **FRANKFORT-ON-THE-MAIN** — **MUNICH** — (*How many from Bremen? R. these 8. R. from Bristol.*)

Remark. The teacher will here read sec. 309. German towns given more at large hereafter.

(353.) **Belgium.** — **BRUSSELS.**

(354.) **Holland.** — **AMSTERDAM.**

(355.) **Denmark.** — **COPENHAGEN,** on I. of **See-land.** (*R. these 3. R. from Bristol.*)

(356.) **Portugal.** — **LISBON,** **OPORTO** (*R. these 2—R. from Bristol.*)

(357.) **Spain.** — **MADRID** — **SEVILLA** — **CADIZ** — (*R. these 3*). **GRANADA** (*R. these 4—R. from Bristol.*)

(358.) **France.** — **HAVRE** — **PARIS** — **BOURDEAUX** (*R. these 3*). **LYONS** — **MARSEILLES.** — (*R. these 4—R. from Bristol.*)

- (359.) **Switzerland.** — BERNE.
- (360.) **Kgd. of Italy.** — FLORENCE — NAPLES
— (*R. these 3.* — *R. from Bristol*).
- (361.) **Papal Territory.** — ROME.
- (362.) **Austria.** — VIENNA — PESTH — TRIESTE.
(*R. these 4.* — *R. from Bristol*).
- (363.) **Roumania, or Danubian Principalities.**
— BUCHAREST.
- (364.) **Turkey in Europe.** — CONSTANTINOPLE.
- (365.) **Greece.** — ATHENS. (*R. these 3.* — *R. from Bristol*).
- (366.) **Turkey in Asia.** — SMYRNA — TREBIZOND
— BAGDAD — (*R. these 3*). HILLAH — BASRA — MOKHA
(*R. these 3* — *then from Smyrna*). MECCA — JIDDA —
MEDINA (*R. these 3* — *then from Smyrna*). JERUSALEM —
JEAN D'ACRE — DAMASCUS — (*R. these 3* — *R. from Smyrna*) —
BEIRUT — ALEPPO (*R. these 2* — *R. from Smyrna*).

Remark. The towns Mokha, Mecca, Jidda, and Medina are sometimes said to be in the territory of Arabia, sometimes, of Egypt and sometimes, of Turkey in Asia. The eastern coast of the Red Sea is politically attached to Egypt, but, as the turkish supremacy is nominally recognized over this part of Arabia, which is occupied by turkish troops, we have considered those ancient arabian towns to be yet within the limits of Turkey in Asia.

- (367.) **Arabian States, with kingdom of the Wahabees and Muscat.** — ER RIAD — MUSCAT — ADEN. (*R. these 3.* — *R. from Smyrna*).

(368.) **Persia.** — TEHERAN — ISPAHAN (*R. these 2.*
— *then from Smyrna*).

(369.) **Beloochistan.** — KELAT. (*R. — then from Smyrna*).

(370.) **Hindustan or British India.** —
LAHORE — DELHI (del'-lee) — LUCKNOW (*R. these 3*).
BENARES (ben-ah'-res) — CALCUTTA — RANGOON (*R. these 3. — R. from Lahore*). HYDERABAD' — MADRAS' —
PONDICHERRY (to France) (pon-de-sheer'-ree). (*R. these 3. — R. from Lahore*). CALICUT — MYSORE (mi-zōre') —
GOA — (*R. these 3. — R. from Lahore*). BOMBAY —
BARO'DA — CURRACHEE (*R. these 3. — R. from Lahore — R. from Smyrna*).

(371.) **Birman Empire.** — AVA.

(372.) **Empire of Anam** (Cochin China). —
HUÉ. — SAIGON (si-gon') — the latter now capital of a
little french colony.

(373.) **Empire of Siam.** — BANGKOK. (*R. these 4*
— *R. from Smyrna*).

(374.) **Malay States.** — MALACCA (*British town*).

(375.) **Chinese Empire.** — MAIMATCHIN — KIRIN-
OOLA — MOOKDEN (*R. these 3*). PEKING — NANKING —
HAN-KOW (*R. these 3. — R. from Maimatchin*). SHANGHAI
— FOO-CHOW — CANTON (*R. these 3 — then from Maimat-*
chin — R. from Smyrna).

(376.) **Kingdom of Corea.** — HAN-YANG —
KING-KI-TAO (*R. these 2. — R. then from Smyrna*).

(377.) **Island Empire of Japan.** — HAKODADI
— JEDDO — MIAKO — NANGASAKI (*R. these 4 — R. from Smyrna*).

(378.) **Russia in Asia or Siberia.** — (On Arctic Ocean and within arctic circle): **OLENSK—NISHNEI-KOLYMSK** — (*R. these 2*). (On Pacific): **PETROPOLAWSKI—OKHOTSK—NICOLAJEFSK** (*R. these 3 — R. from Olensk*). (Interior Towns): **YAKOOTSK—KIAKHTA—IRKUTSK** (*R. these 3 — R. from Olensk*). **KRASNOYARSK—BARNAUL—TOBOLSK** (*R. these 3 — R. from Olensk — R. from Smyrna*).

Remark. 1. Maimatchin and Kiakhta may be said to be one town, the former being on the Chinese, the latter on the Russian side. They are important trading stations between Russia and China. 2. Hankow or Han-Keoo ("mouth of commerce") is one of the greatest commercial centers of the world—population believed to be eight million.

(379.) **Western Tartary.** — **KHIVA—KOKAND—SAMARCAND** — (*R. these 3 — R. from Smyrna*).

(380.) **Afghan States.** — **CABUL.**

(381.) **Cashmere.** — **SERINAGUR.**

(382.) **Nepaul.** — **KATMANDOO.** (*R. from 3 — R. from Smyrna*).

(383.) **Bootan.** — **TASSISUDON.**

(384.) **Tibet.** — **LASSA.** — (*R. these 2. — R. from Smyrna*).

(385.) **Morocco with Tuat.** — **MOROCCO—FEZ—TANGIERS** — (*R. these 3*). **AGABLY—INSALAH (Tuat).** (*R. these 4*).

(386.) **Algeria.** — **ALGIERS—CONSTANTINE.** (*R. these 2 — then from Morocco*).

(387.) **Tunis.** — TUNIS (near ruins of ancient Carthage)—CABES. (*R. these 2.—R. from Morocco*).

(388.) **Tripoli with Fezzan and Barca.** — TRIP'OLI.

(389.) **Egypt, with Nubia and Kordofan'.** — ALEXANDRIA—ROSETTA—CAIRO (*R. these 3*). SUEZ—RUINS OF MEMPHIS—RUINS OF THEBES. (*R. these 3 — R. from Alexandria*). ASSOUAN — DONGOLA — KHARTUM (*R. these 3—R. from Alexandria*). RUINS OF MEROE (me'-ro-e)—SENNAAR. (*R. these 2 — R. from Alexandria—R. from Morocco*).

(390.) **Habesh or Abyssinia.** — MASSOWAH (mass'-o-wah)—GONDAR. (*R. these 2 — R. from Morocco*).

(391.) **Somauli and Galla Country.** — BERBERA HURRUR (hoor-oor)—BRAVA. (*R. these 3 — R. from Morocco*).

(392.) **Suaheli Coast or Zanzibar.** — MOMBAS — ZANZEBAR—(*R. these 2—R. from Morocco*).

(393.) **Island kingdom of Madagascar.** — ANTANANARIVO—TAMATAVE (*R. these 2 — then from Morocco*).

(394.) **Portuguese colonies of Mozambique and Sofala.** — MOZAMBIQUE—SOFALA—(*R. these 2 — R. from Morocco*).

(395.) **Zooloo Country.** — No town.

(396.) **Cape Colony, with Natal and Kaffraria,** — PIETERMARITZBURG (Natal)—GRAHAM'S TOWN—CAPE TOWN (*R. these 3 — then from Morocco*).

(397.) **Land of the Damara and Namaqua, including Hottentot Country.** — BARMEN.

(398.) **Angola.** — ST. PAUL DE LOANDO.

(399.) **Congo.** — SAN SALVADOR (*R. these 3—R. from Morocco*).

(400.) **Benguela — Loango — Biafra.** — No towns.

(401.) **Kingdom of Dahomey.** — BADAGRY.

(402.) **Negro rep. of Liberia.** — MONROVIA.

(403.) **Senegambia.** — ST. LOUIS. (*R. these 3—R. from Morocco*).

(404.) **Soudan.** — TIMBUCTU — KOUKA — WARA (*R. these 3—R. from Morocco*).

(405.) **Land of the Bechuanas.** — LATTAKOO (*R. from Morocco*).

(406.) **Island Towns (not elsewhere given).**

Remark. The possessions of Great Britain, Holland, Spain, France and United States of America (in Oceania) are indicated by boundary lines on Pl. IV. Some parts of the region, marked to *Holland*, are, however, independent. Spain possesses only a part of the Philippine Is. and a part of the Ladrone Is. The N. W. region of the I. of Borneo, capital Bruni, is ruled by an independent Malay Sultan and the northernmost angle, by a Malay pirate state: Sulu or Soo-loo.

(407.) **Principal British Island Towns.** — POINT DE GALLE (Ceylon) — SINGAPORE (I. of Singapore — *R. these 2*). BRISBANE — SYDNEY — MELBOURNE (*R. these 3—R. from Point de Galle*). ADELAIDE — PERTH (Australia — *R. these 2—R. from Point de Galle*).

HOBARTON (Tasmania).—AUCKLAND—WELLINGTON—DUNEDIN (New Zealand) (*R. these 4. R. from Point de Galle*). In *Mediterranean*: VALETTA (Malta). In *Atlantic*: JAMES TOWN (St. Helena—*R. these 2. R. from Point de Galle*).

(408.) **Principal Dutch Island Towns.** — PALEMBANG (Sumatra)—BATAVIA (Java)—BANJARMASSIN (Borneo). (*R. these 3—R. from Point de Galle*).

(409.) **Principal Spanish Island Towns.** — MANILLA (on I. of Luzon—Philippine Is.)—PALMA (on Majorca—Balearic Is.). (*R. these 2—R. from Point de Galle*).

(410.) **Principal Portuguese Island Towns.** — ANGRA (on I. of Terceira—Azores)—FUNCHAL, foon-shal'—Madeiras (*R. these 2.—R. from Point de Galle*).

(411.) **Principal French Island Towns.** — BASTIA—AJACCIO, (ayat'-cho)—Corsica—(*R. these 2—R. from Point de Galle*).

(412.) **Principal Italian Island Towns.** — CAGLIARI (cal-ya'ree), (Sardinia)—PALERMO (Sicily—*R. these 2—R. from Point de Galle*).

(413.) **Independent kingdom of Sandwich Is.** — HONOLULU, chief sea-port. (*R. from Point de Galle*).

(414.) *Remark.* That division of Oceania, marked "American", and in Pl. II "American Polynesia", consists of about 50 guano islands which, principally by the right of discovery, have become the property of various citizens of the United States. By an act of the United States Congress, August 18, 1856, they were declared part of the territory of the United States. The name "American Polynesia" is proposed in the "Mittheilungen" by Dr. Petermann.

EXERCISES

ON LATITUDE AND LONGITUDE.

(415.) Let us read over again sections 56 to 60. How many parallels of latitude are drawn on Pl. II? Eight north and eight south. How far are they apart? Ten degrees. How many on Pl. III? Also 8 north and 8 south.

(416.) **Latitude of C. Horn.** — Take Pl. III. — What is the lat. of C. Horn? Between 50° and 60° S. lat. If the map were drawn on a large enough scale, not only the degrees, but the minutes and seconds, would be marked on the border, and we should find the lat. of C. Horn to be $55^{\circ} 58' 4''$. A degree on all the large circles of the earth—that is, on equator and on any meridian—is about 69 english statute miles. Sixty nine times 360 is 24,840. C. Horn, then is, about 69 times 56 (more than 3800) miles from equator.

(417.) **First Meridian** — that is, the meridian from which longitude is measured. — Longitude, we have seen, is the distance of a place, E. or W., from some given meridian. Ancient geographers count from Ferro, the westernmost of Canary Is. (Pl. II), because this island was formerly regarded as the westernmost point of the habitable world. The Germans, and the people of eastern Europe, still measure from Ferro; the French, sometimes from Ferro, sometimes from Paris; the Spaniards, from Madrid; the English, from the meridian which passes through the royal observatory of Greenwich, a part of London. In nautical works the Germans also measure from Greenwich. United States geographers measure sometimes from Greenwich, sometimes from Washington. In the present work, we measure from Greenwich. All nations ought to unite upon a common first meridian.

(418.) **Longitude of C. Horn.** — Counting from meridian of Greenwich, by the arabic figures on equator, we find long. of C. Horn to be between 60° and 70° . On a

a larger map we should be able to count with precision $67^{\circ} 16'$ W. Read "Explanation" Pl. III. fig. 6.— You here learn to connect the terms minutes and seconds with distance, as navigators and other travellers do, when wandering over the wide surface of the globe.

(419.) **Length of degrees of longitude and latitude.** — The length of degree of longitude varies in proportion to the distance from equator. There is also a slight change in the length of degrees of latitude, as we approach the pole in consequence of the oblate shape of the globe.

(420.) **Different time of day, when noon at Greenwich.** — Remark, on Pl. II, the meridian of Greenwich. Suppose it to be there noon. How late will it be, on the meridian corresponding to that of Greenwich, on the opposite side of the globe? Midnight. As the earth revolves from W. to E., where would the rising sun be first seen—on places East or West of Greenwich? On places E. of Greenwich of course. When therefore it is noon at Greenwich, where would it be 6 o'clock in the afternoon? On meridian 90° degrees E. of Greenwich? How late would it be on meridian 90° West? Six o'clock in the morning. You will find these 4 meridians indicated on Pl. II. The Roman numbers, on equator, show how late it is, at every point of globe's surface, when noon at Greenwich.

Remark. The teacher may here put such questions as: When noon at New Orleans, how late would it be at Greenwich? Six o'clock, afternoon. — How late on the Feejee Is? Six o'clock morning. When noon in Anadir G., how late in Spitzbergen? Midnight.

(421.) **Latitude of different places.** — A little attention will secure you against awkward mistakes often made with regard to relative position of places. Bear in mind that the land of the globe lies principally north of equator—that S. America, an angle of Africa and Australia, with some small land fragments can, alone, ever have S. latitude. No place can have a higher latitude, than 90° . If we know exactly the countries intersected by equator, tropics and arctic circles, we already approach a clear idea of the relative position of all the countries of the earth.

Let us divide the countries of N. hem. into 7 groups, solely with reference to their astronomical position on the earth's surface.

(422.) **Countries, etc., on, or near, equator.**—Ecuador—Colombia—Venezuela—(*R. these 3*). English—Dutch—French Guiana—(*R. these 3—R. from equator*). Brazil—Bolivia—Peru—(*How many? R. those 9*). Lower Guinea, with Congo, Loango, Biafra—(*R. these 4—R. from equator*). Unexplored regions of Central Africa—Empires of Muropue and Cazembe—(*R. these 2—R. from equator*). Somauli and Galla Country—Suaheli Coast or Zanzibar (*R. these 3—R. from equator*). Sumatra—Borneo—Celebes (*R. these 3—R. from equator*). Papua or New Guinea, through Malaysian and Polynesian Is., American Polynesia to Ecuador again (*R. from Ecuador*).

(423.) **Countries, etc., on, or near, 45th parallel.**—The 45th parallel is exactly half way between equator and pole. The objects are (Plates III and IV) northern territories and states of the United States—great Lakes—Nova Scotia (*R. these 3*). French Fishery Is.—France—Switzerland (*R. these 3—R. from United States*). Roumania—Turkey in Europe—Black Sea—(*R. these 3—R. from U. States*). Russia in Europe—Caspian Sea—Sea of Aral—(*R. these 3—R. from U. States*). Western Tartary or Toorkistan—L. Balkash—China (*R. these 3—R. from U. States*). Japan, across Pacific to United States again (*R. from U. States—R. countries on equator—on 45th parallel*).

(424.) **Countries, etc., on, or near, tropic of Cancer.**—The tropic of Cancer is about half way between 45th parallel and equator; nearly one quarter between equator and pole. The countries and other objects are: Mexico—Florida—West India Is. (*R. these 3*). Sahara—Egypt—Arabia (*R. these 3—R. from Mexico*). Persian G.—Arabian Sea—Beloochistan (*R. these 3—R. from Mexico*). Hindostan—Indo-Chinese States—China (*R. these 3—R. from Mexico*). Philippine Is.—Sandwich Is.—Mexico (*R. these 3—R. from Mexico*).

(425.) **Countries, etc., on arctic circle.**—Behring Str.—Russian America—British America (*R. these 3*).

Unoccupied Arctic Lands—Greenland—Iceland—(*R. these 3—R. from Behring Str.*). Sweden and Norway—Russia in Europe—Russia in Asia or Siberia (*R. these 3—R. from Behring Str.*) Tchooktchee P.—Behring Str. (*R. from Behring Str. to Behring Str.—R. Objects on equator—on 45 parallel—tropic of Cancer—arctic circle*).

(426.) Countries, etc., on, or near, tropic of Capricorn. — Bolivia—Peru—Chili (*R. these 3*). Argentine Confederation—Paraguay—Brazil (*R. these 3—R. from Bolivia*). Land of the Damara and Namaqua, including Hottentot Country (*R. these 3—R. from Bolivia*). Land of Bechuanas—Cape Colony—Transvaal Rep. (*R. these 3—R. from Bolivia*). Zooloo Country—Madagascar—Australia (*R. these 3—R. from Bolivia*). Pl. II. New Caledonia—Feejee Is.—Friendly Is. (*R. these 3—R. from Bolivia*). Society Is.—Low Is.—Pitcairn Is. (*R. these 3—R. from Bolivia*).

(427.) Countries on, or near, 45 parallel south. — S. point of Chili—Patagonia—Tasmania or Van Diemen's Land (*R. from tropic of Capricorn—45 parallel S.*).

(428.) Objects on antarctic circle. — Graham Land—Cape Ann—Repulse B.—Wilkes Land (*R. from arctic circle—tropic of Capricorn—45 parallel S.*).

(429.) Towns on, or near, parallel of Hammerfest (northernmost town of the globe). — Among the very few human habitations near parallel 70, are: Hammerfest—Tornea—Archangel (*R. these 3*). Olenok—Yakootsk—Nishnei-Kolymsk (*R. these 3—R. from Hammerfest*). Godthaab—Reikiavik, etc, (*R. these 2—R. from Hammerfest*).

(430.) Towns near parallel of St. Petersburg. — The class of towns, next removed from the frozen regions, will be found between or near the 55°—60° parallels. St. Petersburg—Moscow—Nishnei-Novgorod (*R. these 3*). Kasan—Tobolsk—Barnaul (*R. these 3—R. from St. Petersburg*). Krasnojarsk—Irkutsk—Okhotsk (*R. these 3—R. from St. P.*). Nicolajefsk—Petropaulovsk (*R. these 2—R. from St. P.*). Across Pacific, New Archangel—Fort York (*R. these 2—R. from St. P.*). Glasgow—Edinburgh—

Dundee (*R. these 3—R. from St. P.*). Copenhagen—Gothenburg—Bergen (*R. these 3—R. from St. P.*). Christiania—Upsala—Stockholm (*R. these 3—R. from St. P.*). Reval—Riga—St. Petersburg (*R. these 3—R. from St. P.*).

(431.) London—about parallel 51.—London—Berlin—Warsaw (*R. these 3*). New Westminster—Fort Garry—Quebec (*R. these 3—R. from London*). Montreal—St. John (*R. these 2—R. from London*).

(432.) New York—lat 41°.—Oporto—Madrid—Rome (*R. these 3*). Naples—Constantinople—Trebisond (*R. these 3—R. from Oporto*). Khiva—Kokand—Samarcand (*R. these 3—R. from Oporto*). Peking—Mookden—Kirin-oola (*R. these 3—R. from Oporto*). Han-yang—Hakodadi—(across Pacific) Salt Lake City—Chicago—Cleveland—(*R. these 5—R. from Oporto*).

The teacher may multiply these questions at discretion.

CONFIGURATION OF GLOBE'S SURFACE.

(433.) We abridge from eminent geographers, among whom are Humboldt and Carl Ritter, a few striking observations on this subject.*

1. The northern hemis. (Pl. First, I. K) contains three times as much land as the southern—the eastern (E. G), twice as much land as the western. 2. The N. temperate zone presents a greater proportion of land than any other; and 13 times more than the S. temperate zone. (I. L). 3. On equator, five-sixths of the circumference is water, the exception being narrow extremities of S. America, Africa and several Malaysian Is. (I. K). 4. In each continent, a great fragment is nearly broken off from the mainland, S. America being united only by Isthmus of Darien—Africa, by that

* A small volume from Ritter, translated by Mr. Gage, and published by Lippencott, is recommended to american students.

of Suez. 5. The peninsulas of the world are generally projected toward the South; as Scandinavia, Spain, Italy, Turkey, Greece, Arabia, Hindostan, Indo-China, Corea, Kamtchatka, Africa, S. America, Aliaska, California, Malacca, Florida, Nova Scotia, and Greenland. The principal exceptions are, Jutland, and Yucatan. stretching northward—Russian America and Asia Minor, westward. 6. Peninsulas, like continents, have often the same pyramidal termination—ex. Hindostan, Greenland, etc. 7. The E. and W. Continents each throw out, far to the north, insular masses; one—Greenland and the Arctic Archipelago; the other—Nova Zemla Is., New Siberia Is. and Spitzbergen. In N. hem. human explorations appear to have been arrested about the 82 parallel. The am. expedition, under Hayes, reached or saw the most northern land of the known world. (Pl. IV). 8. The greatest breadth of both continents is on the same parallel—50th (Pl. IV). 9. The southern extremities of Africa, Australia, New Zealand and S. America (Pl. IV) form a regular gradation, each reaching nearer the pole in the order above named, 10. Both hemispheres have submarine prolongations, indicated, in S. America and Asia, by islands—in Africa, by shoals. 11. Considering Australia a continent, one twenty-fourth of the earth's land consists of islands. 12. Different and remote portions of the globe seem cast in somewhat the same mould, as if the form were determined by the same law: Examples. Florida, extending into West India Is.;—Grecian P., into Grecian Archipelago—Malacca, into Malaysian Is. Cuba lies, near Florida, in somewhat the same relative position as Sumatra, near Malacca. 13. Three pointed peninsulas projected by Europe southward into Mediterranean, namely: Spanish P., Italy, Grecian P.—correspond to three, projected by Asia into Indian Ocean—Arabia, Hindostan and China. Remark the juxta-position of Italy and Sicily, compared with that of Hindostan and Ceylon. 14. S. America, Africa, Australia, are almost destitute of gulfs and bays. N. America, Europe and Asia, on the contrary, have innumerable, deep recesses, and protrude immense, shattered prominences. 15. The projections and indentations of eastern coast of America singularly coincide with those of western coasts of Europe and Africa. The eastern angle of S. America suggests the idea that it once occupied the place of G. of Guinea; while the western

protuberance of Africa looks as if it had been torn out of Mexico. The conformity of opposite coasts of Greenland and Norway is obvious. 16. Humboldt remarks the still more interesting circumstance; viz. that, not only the projections of one coast correspond with the recesses of the other, but the nature of the mountains and plains also correspond. 17. As mountain ranges run in the direction of the greatest length of each continent, so they do in islands and peninsulas. Examples—Apennines—Ghats—Scandinavian Mts. etc. 18. The highest mountain peaks rise in, or near, torrid zone. Mt. Aconcagua is just outside the tropic of Capricorn; Mt. Everest, just outside the tropic of Cancer. 19. The loftiest mountain ranges or peaks stand upon elevated table-lands, as a statue upon its pedestal. 20. The greatest elevation, above the sea-level, of any point of the globe's surface, is 5 or $5\frac{1}{2}$ miles; say 1—1400th (one fourteen-hundredth) part of the earth's diameter. The proportion is that of a grain of sand upon the surface of a polished ivory globe, 6 feet in diameter; so that the sphericity of the planet is scarcely disturbed. The inequalities are not so great as those of an orange. Supposing the orange to be our earth, the roughnesses of the skin, scarcely perceptible to the eye or hand, would be stupendous mountain ranges, lifting their awful heads into the heavens. "And, creeping at their base," it is sometimes added, "what an insignificant insect is man!"

(434.) *Remark.* A momentary digression is here proper. There is a class of writers who think the smallness of man's body, a reason for rejecting the Scriptures. Compared with the earth's dimensions—still more with astronomic distances (16, 17, 19)—man is such an inconceivably diminutive animalcule* that the idea of God making a Revelation to him, is simply absurd. There are learned philosophers not ashamed to talk this kind of nonsense! The logical reply is:—it has no connection whatever with the subject. Intellectual and spiritual existence and pre-eminence are not dependent upon material dimensions. The sophist may be confuted by the following question; "If Plato, Paul and John are of too minute bodily stature to

* An-i-mal'-cule—an animal too small to be discerned except by a microscope.

occupy the attention of their Creator,—how many million miles tall ought they to be, in order to attract God's love, and to become worthy of revelation and immortality?"

Geology and Astronomy are most unjustly accused of contradicting Scripture in another point. Science, it is pretended, has discovered that the universe is explainable without God. This is altogether untrue. We repeat (280), and the fact cannot be too distinctly proclaimed: science has never explained, and has not made the least progress toward explaining, the origin of things. The wisest savant, on this point, is as ignorant as a little child. It is true, Copernicus, Kepler and Newton discovered certain laws of matter, and showed how the laws operate. But, whence came those laws? Whence came matter? Whence came Copernicus, Kepler and Newton? The atheist accounts for the bird by following it back to the egg; but ask him to account for the egg! Science has traced many effects to causes, and made amazing discoveries; but who has discovered the primal cause? Of the universe and man, there is only one explanation:—"In the beginning God created."

DISTANCES AND DIMENSIONS.

(435.) We naturally desire to know the distance and size of places; but a scale of distance, for planispheres, like Plates II and III, would be too abstruse. Some considerations, however, will assist us in forming tolerably correct ideas. We know (22) that the equatorial circumference is 24,840 English or statute miles, and that the polar circumference is nearly the same. A traveller, passing around the earth, either on the equator, or on any meridian, would thus make a journey, the length of which we know exactly. Half way around the globe, therefore, on a great circle, (either the equator or a meridian), is half of 24,840 miles, namely 12,240 miles. One quarter is 6120 miles, and so on. This already gives some idea of distances. From the pole to the equator (Plate II) is one

quarter of the globe's circumference. A quarter of the length of the equator must be the same distance. If, therefore, you travel from any place, on the equator, to the N. or S. Pole—say from Borneo, the Gaboon River, Chimborazo etc., your journey is about 6120 miles long. But this is a vague mode of measuring, even for places, both of which lie on the meridian. We have a more exact mode. As every meridian, and, of course, the equator, is divided into 360° , a degree, on the equator or on the meridian, must be the 360th part of 24,840 miles—namely 69 English miles and a fraction.

(436.) **Geographical mile — English or Statute Mile.** — The word mile has different meanings. It varies in different countries. The English statute mile is 5280 feet; while the English geographical mile is one-sixth longer; its length being determined by the fact that there are exactly 60 of them in every equatorial degree. It would be a great convenience to mankind, if a common standard could be universally adopted.

(437.) **Places on, or near, equator.** — We thus easily find the distance, length and breadth of places lying E. or W. of each other on, or near, equator (Pl. IV). What is the breadth of S. America on equator?—Omit fractions. About 30 degrees. How many English miles?—2070 miles. Breadth of I. of Sumatra?—About 4° or 276 miles. Distance, in degrees and miles, of the town Brava in Somauli and Galla Country (Africa), from Singapore?— 60° or 4140 English miles. Distance from Batavia to Guayaquil?— 172° or 11,868 English miles. Breadth of Atlantic from mouth of the Amazon R. to mouth of Gaboon R.? About 60° or 4140 English miles.

(438.) **Places on same meridian.** — What is the greatest length of S. America? About 69° —4761 English miles. Greatest breadth of Australia?— 29° —2000 miles. Breadth of United States of America from Brownsville to Lake of the Woods?—About 24° —1656 miles. Length of England and Scotland?— 9° —621 miles. Length of Caspian Sea?—About 11° —760 miles.

(439.) **Distance of places according to parallels.** — We have thus a certain mode of measuring the distances of places where both lie on equator, and also where both lie on same meridian. Would this mode be applicable to places lying E. and W. of each other on different parallels of latitude? No, because the length of degrees, of course, varies according to each parallel. How then shall we measure the distance of two places on the same parallel? We must ascertain the value, in English miles, of a degree on that parallel. For this we must have a table. One will be found (Plate IV, Explanation 2), on which the length, in English miles, of a degree of longitude is given on the equator, and also the different lengths, on 16 different parallels of latitude. Let us measure the greatest length E. and W. of United States (Pl. III or IV) on 49° —i. e, the northernmost parallel. How many degrees? —About 56° . We learn from the table that the degree of longitude, on this parallel, instead of being 69, as on equator, is only 44. What then is the length of the United States, in English miles?—About 2500 miles. We thus, by help of the table, easily measure, in English miles, the distance of all points on the same parallel.

VOYAGES.

(PLATE IV.)

(440.) **Projections.** — It is almost impossible to construct maps so as to give the relative magnitudes of continents, countries etc. with exactness, although their shapes may be accurate. The different methods devised for doing so, are called Projections. We shall here only notice two. In Plates I. II. and III. the earth is drawn as a globe. This is called the:—

(441.) **Globular Projection.** — Here (Pl. II) the equator is the largest circle. Every parallel is a small circle; and the parallels grow smaller, as they recede from the equator; till, at the pole, they dwindle to a point.

We have already seen that a degree, on the equator, contains more miles than on any parallel; and must, moreover, be of different length, on each parallel. One advantage of this projection therefore is, that the shapes of continents, oceans, etc., are given more correctly. On the other hand, one of the disadvantages is, that certain places, in nature, close to each other, appear remote; for ex.: Behring Str. and Japan—Australia and New Zealand. We receive a confused idea of the relative bearings of those parts of the globe “whose contiguity, in the planisphere map”, is well said to be “so awkwardly interrupted by the diverging circumferences of the two hemispheres.”

You must distinctly understand the above expression. We shall read to you the questions concerning it, with their answers. Take Pl. II. What projection is that? A globular projection.—How is that kind of map called?—A planisphere or planiglobe. Why? Because it represents a sphere on a flat surface or plane. Trace with your finger the circumferences of the two hemispheres in Pl. II. What is the meaning of the word, “contiguity?” The actual contact or touching of two bodies (from two latin words, signifying *together* and *touch*). The sentence, which we are analyzing, means then that, places or countries, which, in nature, touch each other, are, on planisphere maps, awkwardly separated. Define the word, “diverging!”—Proceeding from one point and leaning away, in different directions. Show on Pl. II. where the circumferences of the hemispheres meet or touch?—At 20° W. long.—Where do they diverge?—They immediately begin to diverge or to separate from each other, and may be called “diverging or separated circumferences”, at all their other points. The form of the earth is represented as that of an apple cut into two halves; each half separated from the other and presented to the eye in that separated condition. Give an example or two of some objects whose contiguity, in the planisphere map (Pl. II), is awkwardly interrupted by the diverging circumferences of the two hemispheres?—Iceland. It is quite cut in two. Kamtchatka. Indeed all the points, bordering on the circumference of one hemisphere, are separated from corresponding points, bordering on the circumference of the other hemisphere.

with which they ought to be connected. Not only the contiguity, but also, of course, the proximity is interrupted. Places, near to each other, are made to appear remote; for instance, New Zealand and Australia—Japan and Aliaska. The Antarctic Continent, which ought to be one figure, a huge ice-mass, is cut in two; and the fragments recede so far away from each other that we can scarcely bear in mind their contiguity. Polynesia, Australasia, the Tchooktchee P., are also awkwardly separated; the Azores (Pl. IV), opposite Lisbon, near Madeira, are made to recede from both; while Greenland, comparatively near Scotland and Ireland, looks more remote than the C. of Good Hope. Among other distortions, are the Atlantic and Pacific—particularly the former. The appearance presents a perpetual puzzle to the young student endeavoring to trace a voyage from New York to London.

(442.) **Mercator's Projection** (Pl. IV.) — was introduced by Mercator (mer-cā'-tor), in 1556, for the particular convenience of mariners. It is also called the Cylindrical Projection, because it is drawn as if the earth were shaped like a cylinder, as in Pl. VIII. O. A cylinder, in Geometry, is a long, circular body, of uniform diameter, its extremities forming equal parallel circles. If the earth were shaped so, its surface, unrolled, would appear like Pl. IV;—the tropics of Capricorn and Cancer—the arctic and antarctic circles—the parallel of latitude at the pole—and all the other parallels, would be as large as the equator. The degrees upon each, therefore, would be of the same length. — But the earth is not shaped so. Hence the disadvantage of this map is that, among other peculiarities, the length of the degrees of longitude, and those of latitude, are exaggerated toward the poles; and the relative magnitudes of the polar regions and the objects near them, as compared with those near the equator, are larger than they ought to be. Greenland, Sweden, Norway, British America, Asia (Pl. IV), will strike your eye as shapes different from those in Pls. I. II. III. Bearing this in mind, so as not to fall into an error as to the relative dimensions of places in the polar and equatorial regions, the Mercator projection is useful in several respects. It may be safely consulted in connection with the planispheres; for the errors of the two projections correct each other. We see the earth's entire

surface at one view. No diverging circumferences interrupt the contiguity, or distort the proximity, of places. The disjoined pieces of Iceland and Kamtchatka—the Atlantic and Pacific—Polynesia and Australasia—re-appear in their natural entireness. We see New Zealand, close to Australia, in its right place, and regular gradation between C. of Good Hope and S. Pole (433-ninth paragraph). The eye follows with pleasure every unbroken outline, and traces the relative position of every point—of Kamtchatka and Behring Str. — Tchooktchee P. and Japan — Iceland, Greenland, Norway and Great Britain—New York and London—the Azores and Madeiras—the La Plata and C. of Good Hope. The youngest schoolboy can go, in imagination, from New York to London, without embarrassment. We have, therefore, chosen the Mercator projection for the following imaginary voyages to different countries and towns of the world, although it will often be found useful to refer to Plates I. II. III.

(443.) It would not be an easy task to cross all the regions and visit all the points of the globe. We should meet a variety of obstacles not always surmountable. Sometimes we should find ourselves among populations speaking languages quite unintelligible—in lands desolated by wars—in oceans blocked up with ice—in burning deserts or frozen steppes, where neither animal nor man can resist the winter storm or the summer drought—in places afflicted with pestilence or malaria—seas infested with cruel pirates or embarrassed by dangerous marine vegetation—savage districts or islands where we incur the peril, not only of being murdered, but of being eaten by our fellow-beings. Magellan, who gave his name to the Strait, was killed (1521), by the savages of the Philippine Is. Cook was massacred by the natives of the Sandwich Is. (1779). An interesting young Prussian savant, Mr. Schlagintweit, after crossing the Himalaya Mts., from Calcutta to Lhassa (Pls. IV and III), was seized, by the fanatic chief of a Turkish tribe, and beheaded (1837).

(444.) **Voyage from New York to Nishnei-Novgorod.**
— *Remark.* 1. As it is not the object of these voyage-lessons to convey instruction concerning present routes of travel, steamships, railroads, etc., we do not always choose

the most direct way. 2. Degrees of latitude and longitude, miles, etc., are given without fractions.

Point out Nishnei-Novgorod (nizh'-nee). Go to it by Gibraltar.—In what country? Russia in Europe.—In what direction from New York? North-east.—Longitude of New York? 74° W. from Greenwich.—Longitude of Nishnei-Novgorod? 44° E.—How many degrees is Nishnei-Novgorod E. of New-York? 118° .—Latitude of New York? 41° .—Latitude of Novgorod? 56° .—How many degrees does Novgorod lie N. of New York? 15° .—Bound Russia in Europe (Plates IV and III). N. by a part of Sweden, White Sea and Arctic Ocean; E. by Russia in Asia or Siberia and Caspian Sea; S. by Caspian Sea, Persia, Turkey in Asia, Black Sea, Roumania, Austria; W. by Black Sea, Roumania, Austria, Germany, Baltic and Sweden.—In what zone lies Russia in Europe? N. temperate and north frigid.—What is the northernmost parallel of Russia in Europe? About 70° .—Conditions of day, night and seasons on that parallel? Longest day, two months; longest night, of course, the same. (See Explanation, at left, of Pl. IV; also Text-Book 93 and 94). It thus lies far within arctic circle and the region of intense polar cold. The southernmost parallel? 39° . Conditions of day, night and seasons on this parallel? Longest day and, of course, longest night—about 15 hours:—not very different from the day and night of Boston and New York. What countries or places lie on that northern seventieth parallel, going E. around the world? Russia in Asia—Russian America—Unoccupied Arctic Lands—Baffin Bay—Greenland—northern part of Norway and Sweden.—What countries or places lie on, or near, the southernmost parallel, going E. around the world? Russia in Asia—Western Tartary or Toorkistan—Chinese Empire—Kingdom of Corea—Empire of Japan—the United States—Portugal—Spain Italy (Rome, Naples)—Greece—Turkey in Asia.—In going from New York to Novgorod, what waters do you pass through or near? E. across Atlantic—then (Pl. II. fig. 5)—Str. of Gibraltar—G. of Lions—G. of Genoa—Tyrrhenian Sea—Str. of Messina (Scylla and Charybdis)—Ionian Sea—Adriatic Sea—Levant (191)—Aegean Sea or Grecian Archipelago

—Str. Dardanelles or Hellespont—Sea Marmora—Str. of Constantinople or Bosphorus—(now Pl. III. Fig. 1)—Black Sea—Str. of Kertch or Yenikale—Sea of Azof—(now Pl. IV)—up river Don, cross canal to Volga (largest river in Europe), to Novgorod.—What countries have you coasted, on your left? Portugal—Spain—France—Italy—Austria—Turkey in Europe—Greece—Turkey in Europe again—a small part of the coast of Roumania—Black Sea—then Russia in Europe.—What countries did you pass on your right? Morocco—Algeria—Tunis—Tripoli with Barca and Fezzan—Egypt—Turkey in Asia (including Palestine or the Holy Land).—The mouths of what great rivers have you passed on your left? Guadalquivir—Ebro—Rhône—Po—Danube—Dniester—Dnieper and Don.—The mouth of what great river on your right? The Nile.—Name towns you passed on, or near, your left? Cadiz—Granada—Marseilles—Rome—Naples—Palermo—Athens—Constantinople—Odessa—Sebastople.—Name towns on your right. Tangiers—Algiers—Constantine—Tunis—Cibes—Tripoli—Alexandria—Cairo—Rosetta—Jerusalem—St. Jean D'Acre—Beiruth—Damascus—Aleppo—Smyrna—Trebizond—Kazan—Novgorod.—On what sea, lake or river stand the following towns? Marseilles? On G. of Lions.—Constantinople? On Strait of Constantinople or Bosphorus, near Black Sea.—Trebizond? On Black Sea.—Smyrna? On Aegean Sea or Grecian Archipelago.—Alexandria? Rosetta? Cairo? On Nile.—Beiruth? St. Jean D'Acre? On Mediterranean.—Read rivers of Russia in Europe, beginning with Volga, going W. and N. around.—Volga—Don—Dnieper—Dniester—Pruth—Niemen (nee'-men)—Duna—Dwina—Petchora. Read towns of Russia in Europe.—Nishnei-Novgorod—Kazan—Moscow—Astrachan—Sebastople—Odessa—Kiev—Warsaw—Riga—Reval—St. Petersburg—Archangel—Tornea. On what sea, lake or river stand the following towns? Astrachan? On Volga and Caspian Sea.—Archangel? On White Sea.—Tornea? On Baltic.—St. Petersburg? On Neva R. and G. of Finland.—Reval? Riga? On Baltic.—Warsaw? On Vistula.—Kiev? (Kief)

On Dnieper.—Nishnei-Novgorod? At the confluence of Oka with Volga.

(445.) Nishnei-Novgorod.—This town, beside being a great center of trade between Europe and Asia, interests the traveler as the seat of the largest fair in the world. From 2 to 300,000 (and sometimes more) Europeans and Asiatics are collected; sales of wares and products take place, to the amount of a hundred million dollars, within about eight weeks. There, mingle in the immense crowd, the long-bearded Russian tradesman, the Greek, with his beautiful costume of scarlet and white, the Tartar, the Turk, the Jew, the Persian, the Chinese, the Indian, the Mongol, the Thibet merchant, and the agent of the Russian American Fur-Company, with rich furs—brilliant, fiery fox skins—precious ermines of Yakootsk—splendid sables, etc. For these wares, so much prized by the princes and nobles of Turkey, Persia and Russia, the fur merchant receives hundreds of thousands of dollars.

(446.) From Nishnei-Novgorod to Petropaulovsk (sometimes written Petropaulovski—pe-tro-pōw-lof'skee) by Irkutsk and Nicolajefsk. Point out Petropaulovsk.—In what country? Russia in Asia.—In what direction from Nishnei-Novgorod? Nearly E.—Longitude of Nishnei-Novgorod? 44° E. from Greenwich.—Longitude of Petropaulovsk? 159° E.—How many degrees is Petropaulovsk distant from Nishnei-Novgorod? 115° .—Latitude of Nishnei-Novgorod? 56° N.—How many degrees lies Petropaulovsk S. of Novgorod? 3° S.—Bound Russia in Asia. N. by Arctic Ocean; E. by Arctic Ocean, Behring Str., separating from Russian America, and by Pacific; S. by Pacific, Chinese Empire, Western Tartary or Toorkistan, Persia; W. by Caspian Sea, Europe, Ural river, Ural Mts. and Arctic Ocean.—In what zones lies Russia in Asia? N. temperate and N. frigid zones.—What is the northernmost parallel of Russia in Asia? 78° .—Conditions of day, night, climate, etc., in places on that parallel? About 4 months uninterrupted day in summer, the same night in winter; of course polar cold and everlasting ice.—What is the southernmost parallel of Russia in Asia? 38° N.—Conditions of day and night in places

on that parallel? About 15 hours day in summer, the same night in winter, much the same as in New-York.—What towns, countries or places lie on, or near, that northernmost parallel going E. around the world? Grinnell Land—Smith Strait—Greenland—Spitzbergen.—What towns, countries or places lie on, or near, that southernmost parallel going E. around the world? Persia—Western Tartary or Toorkistan—part of the Afghan States—Chinese Empire—kingdom of Corea—Nippon (the principal island of Japan)—San Francisco—Sacramento—St. Louis—Louisville—Philadelphia—and Washington.—What countries, mountains, lakes, seas, interesting regions do you pass through, or near, in coming from Nishnei-Novgorod to Petropaulovsk? Ural Mts.—Lake Baikal—Sea of Okhotsk.—What great rivers have you passed? Irtish—Ob (Obi)—Yenisei, with its branch Toongooska or Angara—Lena.—By what towns did you pass? Kasan—Tobolsk—Barnaul—Krasnoyarsk—Irkootsk—Kiakhta, adjoining the Chinese town Maimatchin—Nicolajefsk—to Petropaulovsk.—Read the rivers of Russia in Asia. Obi, with its branch Irtish—Yenisei, with Toongooska or Angara—Lena—Kolyma and Amoor.—Read towns of Russia in Asia? Tobolsk—Barnaul—Krasnoyarsk—Irkootsk—Kiakhta—Nicolajefsk—Petropaulovsk—Okhotsk—Yakootsk—Nishnei-Kolymsk—Olensk.—On what sea, lake or river stand following towns in Siberia or Russia in Asia? Tobolsk? On Irtish.—Barnaul? On Obi.—Krasnoyarsk? On Yenisei.—Irkootsk? On Toongooska or Angara (branch of Yenisei).—Yakootsk? On Lena.—Nicolajefsk? On Amoor.—Nishnei-Kolymsk? On Kolyma.

(447.) *Irkootsk* — nearly 4000 miles from St. Petersburg and 1400 miles from Peking—is almost in the center of Asia, where one would least suppose New York and Paris fashions and comforts. Yet, so rapidly is the world changing under the influence of telegraphs, railroads and steamships, that the traveler will find it, in many respects, resembling the towns of western Europe—a theatre, schools, a library, 19 churches, a seminary, an orphan asylum, manufactures, etc. It is the great center of the Russian-Chinese

trade, with an increasing population of about 25,000, and between 2 and 3000 houses. It is the administrative seat of government of the Russian Empire, for all affairs connected with the fleet and marine establishment of the Pacific Ocean; as it has been for Russian American Fur-Company, till the late purchase (523).

(448.) *Nikolajefsk* — on Amoor R. Here we shall find a modern Russian town and fortified military post, several hundred blockhouses, a new handsome church with a lofty tower, many government buildings, a museum, an observatory, a library of 4000 volumes, many schools, and a brisk trade. The principal european newspapers have subscribers here. It is a station of the Russian fleet and may become an important point of communication with California. The Russian steamers ply up the River Amoor, on which it stands. The cold is, however, intense and the river is frozen many months of the year.

Remark. We will not extend our journey to the cheerless region of northern Siberia — to Olensk, the northernmost town of the Russian Empire — nor to Nishnei-Kolymsk, upon the Kolima River, the coldest point of Russia, where the summer breezes, although they bring millions of mosquitoes, are mingled with snow; while in January the thermometer falls to 40° R. (58° F).

(449.) *Petropaulovsk* — capital town of Kamtchatka — principal station of Russian government in this part of the world — population, about 1000 — harbor, formed by a tongue of land, one of the most beautiful and secure upon the earth — by Aleutian Is. closely connected with the Russian Territory, now part of the U. States.

(450.) **From Petropaulovsk to New York.** — Go by New Archangel — San Francisco — Panama — Aspinwall — New Orleans and Key West. — Point out New York. — In what direction from Petropaulovsk? S. E. — Longitude of Petropaulovsk? 159° E. from Greenwich. — Longitude of New York? 74° W. — How many degrees does New York lie E. of Petropaulovsk? 124°. — Latitude of Petropaulovsk? 53° N. — Latitude of New York? About 41° N. — How many degrees does New York lie N. or S.

of Petropaulovsk? 12° S.—Bound United States of America. N. by British America; E. by British America, Atlantic, G. of Mexico; S. by Atlantic, G. of Mexico, Mexico; W. by Mexico and Pacific.—In what zone lie the United States? Altogether in the N. temperate zone, but much nearer the torrid than the frigid zone.—Northernmost parallel of United States? 49° N.—Conditions of day, night, climate, etc., on that parallel? 16 hours longest day and longest night.—Southernmost parallel of the United States? 25° N.—Conditions of day, night, climate, etc., on that parallel? Between 13 and 14 hours longest night, etc.

Remark. While the northern parallel sensibly approaches the character of the frigid zone, the southern parallel is almost identical with tropic of Cancer. The winters of the North, therefore, are long and severe, while the southern states have a tropical climate. It is to be observed, however, that climate does not exclusively depend on latitude, but is modified by other circumstances; as, for instance, elevation, the ocean, mountains, northern or southern slope, geological character of the surface, winds, etc.—What towns, countries or places lie on, or near, that northernmost parallel going E. around the world? Quebec—St. John—Newfoundland—Paris—Munich—Vienna—Odessa—Maimatchin—Kiakhta—and Victoria (on Vancouver I.).—What towns, countries or places lie on, or near, the southernmost parallel, going E. around the world? Canary Is.—desert of Sahara—Insalah—Mourzouk—Assouan—Ruins of Thebes—Medina—er-Riad—Muscat—Kelat—Currachee—Lucknow—Calcutta—Canton—Sandwich Is.—What waters do you pass through, or near, from Petropaulovsk to New York? Pacific—then crossing Isthmus of Darien or Panama—B. of Darien—Mosquito B.—Caribbean Sea—B. of Honduras—G. of Mexico and Atlantic.—What countries have you passed on your left? Russia in Asia or Siberia—Russian America—British America—United States of America—Mexico—republics of Central America, namely: Guatemala—St. Salvador—Honduras—Nicaragua—and Costa Rica—and that part of the Isthmus belonging to the United

States of Colombia, then crossing the Isthmus, through territory of Colombia, we pass Costa Rica again, Nicaragua—Mosquito Coast—Honduras—Guatemala—Balize or British Honduras—Mexico—United States, to New York.—What countries have you passed on your right? Colombia—Hayti and republic of San Domingo.—The mouths of what great rivers have you passed on your left? Kwickpack or Yucon—Frazer—Columbia—Colorado—Rio Grande del Norte—Mississippi—Hudson.—Name the towns on, or near the coast, you have passed on your left? New Archangel—New Westminster—Victoria—Olympia—Oregon City—Salem—San Francisco—Sacramento—Mazatlan—Guatemala—San Salvador—Panama—Aspinwall—San Juan de Nicaragua or Greytown—Bluefields—Vera Cruz—Mexico—Matamoras—Brownsville—Galveston—New Orleans—Mobile—Key West—St. Augustin—Savannah—Charleston—Wilmington—Richmond—Washington—Baltimore—Philadelphia to New York.—Name towns on or near, the coast, you have passed on your right? Guayaquil—Quito—Bogota—Kingston—Havana—Port au Prince.—On what lake, river, or other waters stand the following towns? New Orleans? On Mississippi, near its mouth.—Vicksburg? On Mississippi.—Louisville? On Ohio.—Cincinnati? On Ohio.—Milwaukee? On L. Michigan.—Chicago? On L. Michigan.—Detroit? Cleveland? Buffalo? On L. Erie.—Read from map great rivers of N. America (285)—Towns of United States.—What towns stand on the following rivers, lakes and other waters? On Sacramento R.? Sacramento City (329).—On Rio Grande del Norte? Brownsville (United States), opposite Matamoras (Mexico).—On Mississippi? New Orleans—Baton Rouge—Vicksburg—Memphis—St. Louis.—On Ohio? Louisville—Cincinnati.—On Potomac? Washington.—On, or near, Chesapeake B.? Richmond—Baltimore.—On Hudson and East Rivers? New York.—On L. Erie? Buffalo—Cleveland—Detroit.—On L. Michigan? Chicago—Milwaukee.

(451.) We have now circumnavigated the globe. It would be useless to describe more voyages. The teacher

may lead the pupil, from one point to another, according to his discretion (see table of questions (453)). We suggest a few voyages, particularly for the aid of young persons, who, it is believed, will often be found competent teachers of this work.

(452.) **Several plans of voyages.** — 1. From New York, by C. of Good Hope, to Malacca. — 2. Malacca, by Red Sea, to London. — 3. London, by C. of Good Hope and Calcutta, to Lassa. — 4. Lassa, by Sea of Azof, to Moscow and St. Petersburg. — 5. St. Petersburg, by Reikiavik, to Godthaab. — 6. Godthaab, by Cape Horn, to Panama. — 7. Panama to Hobart Town. — 8. Hobart Town, by Batavia, to Rangoon. — 9. Rangoon, by Cape Town to C. Horn. — 10. C. Horn to Honolulu. — 11. Honolulu, by Cook Str. (New Zealand), to Wellington. — 12. Wellington to Manilla. — 13. Manilla to Yeddo. — 14. Yeddo to Antananarivo. — 15. Kouka to Massouah. — 16. Massouah to Jerusalem. — 17. Jerusalem to Paris. — 19. Paris, by Trieste, Athens, Cairo, to Hurrur. — 20. From Hurrur, by Hobart Town, to San Francisco and Great Salt Lake City, to St. John. — 21. St. John, by St. Lawrence and Lakes, to New Orleans. — 22. New Orleans, by C. of Good Hope, to Pietermaritzburg. — 23. From same to same, by C. Horn. — 24. From C. Horn, very shortest line, to Hobart Town, across antarctic continent and ocean (Pl. I. K). — 25. From Hudson Bay, shortest way, to Tobolsk, across N. Pole (Pl. I. L). — 26. New Zealand, shortest way, to C. of Good Hope, across antarctic continent (Pl. I. K). — 27. Shortest way from La Guayra to Nishnei-Kolymsk, nearly across N. Pole (Pl. I. I). — 28. New York (Pl. IV. sec. 456), by north-west passage, to India. — 29. From San Francisco to Ural Mts., shortest way (Pl. I. I). — 30. From New York, through Str. Bab-el-Mandeb, to Mt. Sinai. — 31. From source of Jordan (Pl. II. fig. 5), by Dead Sea, G. of Akabah (ah'-kah-bah), through Str. of Bab-el-Mandeb, to Mt. Hotham (Australia).

(453.) **Table of questions for each voyage.**

Go from A, (the town you start from), to B, (the town you visit).

Remark. The teacher to indicate the route; as for instance, go to Nishnei-Novgorod, from New York by Str. of Gibraltar — or round C. of G. Hope, up Red

Sea—or up the Persian G.—or west, by Salt Lake city, San Francisco and Sandwich Is.

Point out B (the town you are to visit).

In what country is that town B?

In what direction from A?

Longitude of A?

Longitude of B?

How many degrees does B lie E. or W. of A?

Latitude of B?

How many degrees does B lie N. or S. of A?

Bound C, (the country in which is situated the town you are to visit.)

Remark. This boundary may be sometimes repeated, with more or less detail, according to the discretion of the teacher, taking in towns, lakes, provinces, gulfs, etc.

In what zone or zones lies the country C?

Northernmost parallel of the country?

Conditions of day, night, climate, etc., in places on that northern parallel?

Southernmost parallel of the country C?

Conditions of day, night, climate, etc., on that parallel?

What towns, countries or places lie on, or near, that northernmost parallel, going E. around the globe?

What towns, countries or places lie on that southernmost parallel, going E. around the globe; (or, if the countries, to and from which, we go, are of small dimensions, the question might be: what countries or places lie within the two parallels?)

What waters do you pass through, or near, from A to B? (or, when the voyage is between two inland countries, as from Novgorod to Petropaulovsk, then the question will be: What countries—mountains—rivers—seas—lakes—interesting regions, etc., do you pass through, or near?)

What countries have you passed, on your left, from A to B?

On your right, from A to B?

The mouths of what great rivers have you passed, on your left, from A to B?

On your right, from A to B?

Name the towns, on or near the coast, you passed on your left, from A to B.

On what sea—lake—river, stand the following towns? (the teacher will here select a few of the most prominent towns on the way from A to B.)

Read the rivers of C. (that is the country you are visiting.

Read the towns of C.

Name the river—sea—lake—on which stands each of the following towns: (the teacher will here select the most prominent towns of C.) These questions, of course, may be multiplied according to circumstances.

(454.) **Unknown Regions (117, 118).** — The actual surface of the globe is reckoned at about 197 million square British statute miles. Of these, 145 million are covered by the ocean. A glance at Pl. II. will show four or five regions, almost unknown to the civilized inhabitants of the earth—the N. polar region (3 million sq. m.)—the S. polar region (8,500,000 sq. m.)—and a part of the African equatorial zone (1,500,000 sq. m.)—total, 13 millions—that is one-fifteenth part of entire globe's surface. To these may be added the central region of Australia, and part of eastern Sahara desert.

The supposed advantage of reaching those mathematical points of the earth's axis, called the Poles, is, the important observations and discoveries which may be made in various sciences—among others, Ethnography*, Meteorology^(a), Botany, Zoology^(b), Geology, Astronomy, etc. "As a family", says Behm, "will of course know all the rooms of its own house, so man, from the very beginning, has been inspired with a desire to become acquainted with all the lands, oceans, and zones of the planet, assigned to him as a dwelling place". Among the next great events, to be looked for in the history of geographical discovery, are the arrival of some daring navigator at the point of the N. or S. Pole, and the discovery of the sources of the Nile. For the instruction of our young voyagers, we add a few words upon the latter, and what has been discovered with regard to them (May, 1867).

* *Eth-nog'-ra-phy*—the science which treats of the so-called different *races* of men.

(a) *Me-te-or-ol'-o-gy*—of the atmosphere and its phenomena.

(b) *Zo-ol'-o-gy*—of animals.

(455.) **Sources of the Nile.** — The Nile is formed, principally, by the union of two great rivers (Plates II. III. IV) — one, (sometimes the Black, but, in English, the Blue Nile, in Arabic, Bahr-el-Azrek), has been found to flow through L. Dembea, from a marshy district, 6000 feet above the sea, in about 10° N. lat. The source of the Nile was then supposed to be discovered, (by Bruce), until it became apparent that the *other* great branch, the White River or White Nile, (Bahr-el-Abiad), was the *principal* one—and the attempt to ascertain its origin has cost an immense number of lives. The English traveller, Speke (1861–62), found a large river flowing, north-westward, out of L. Victoria-Nyanza or Ukerewe*, 3500 feet above the sea. His reports have rendered it *probable*, although not absolutely certain (from ocular demonstration), that it connects that Lake with L. Albert-Nyanza or (Luta), from which latter, it has been demonstrated, by Baker, that the *White Nile* flows. Our Plates II. III. IV. are thus drawn. At the E. of L. Victoria-Nyanza, will be observed *another* river and lake. These are the river *Assua* and the L. Baringo. Both, on our map, are drawn only after hear-say—that is, the reports of the aborigines, who declare them even connected with Victoria-Nyanza. But all this is not sufficient to prove that L. Albert-Nyanza and L. Victoria-Nyanza are the *sources* of the White Nile—any more than, tracing the Rhone or the Rhine to L. Geneva or L. Constance, would show those lakes to be the *sources* of their respective rivers. A large region, E. of Victoria-Nyanza, between the Mts. of the Moon and that lake, is absolutely untrodden by civilized man. It is possible, if not probable—but it has not yet been demonstrated—that the White Nile *originally* flows from the lofty Snow Mts. He who shall first trace the widening course of some petty, bubbling rivulet, from the group of Kenia or Kilimandjaro, to L. Victoria-Nyanza, will, at last, solve the problem of the source of the Nile, and identify that mountain-range with the Jebel-el-Komri, or Mts. of the Moon, mentioned by Ptolemy (see remark 275).—The

* It may be presumed (204) that the world at large will generally find it convenient to give this class of names, *thus, in full*,—Lake Victoria Nyanza—however often it may be told that the word, *lake*, is included in the aboriginal name.

unnamed branch, on the maps, between the White and Blue Nile, is the *Sobat R.* Its course has never been explored.

(456.) **North-West Passage.** — We have (182) passed from Behring Str. to Str. of Belle Isle. by what is called *the north-west passage*. Let us bestow a few moments attention upon this interesting portion of the earth. More than 300 years ago (1519), Magellan, a Spaniard, sailed from Spain, down Atlantic, discovered the strait bearing his name, and crossed Pacific to Ladrone and Philippine Is. — while one of his ships continued the voyage, around C. of Good Hope, back to Spain. Our globe was thus circumnavigated, for the first time, and its spherical form demonstrated. This voyage suggested the idea of a shorter passage to India, around the northern coast of N. America. From that time, until our day, the existence of what is called *the north-west passage*, has been one of the problems of Geography. — Since the beginning of the 18th century, a succession of daring navigators, whose names, as well as those of their patrons, are often inscribed upon the straits, islands, etc., have led expeditions into the arctic zone. Behring discovered Behring Sea and Strait (1725—28). Cook passed beyond the 70th parallel (1778). Mackenzie explored a part of this northern coast (1789). The Hamburg whale ship, Capt. Ocken, sailed up the Behring Str. to 80th parallel and reported an open ocean, free from ice, (1815). In 1815 — 18 Kotzebue demonstrated that no connection existed between America and Asia. Parry, Franklin, Ross, and others, have penetrated into these regions and sometimes passed several years. Sir John Franklin (1845) led an expedition in search of the north-west passage and never returned. It has been since ascertained that his ship was locked in by ice, near Beechy I. (Pl. IV.) in Wellington Canal, near Lancaster Sound, on lat. 75 N. He perished, with 105 companions, June 1847. In 1850, the British Capt. McClure visited Banks Land, demonstrating it to be an island — sailed, from W., through Str. Prince of Wales and discovered the mouth of great Melville Sound. His vessel was afterward seen, by Lieut. Pim, coming from the E. The fact was thus established, of a water communication, between Atlantic and Pacific, by Arctic Ocean. A passage runs from Baffin Bay — through Lancaster Sound — Barrow Str. — Melville Sound or Str. — then through Prince

of Wales Str., or, north-west, through Banks' Str., sometimes called McClure Str. In 1850 and 1853, two expeditions, under the patronage of Henry Grinnel Esq., New York, were headed—one, by Capt. De Haven—the other, by Dr. Kane; the latter appeared to confirm the report of the Hamburg Capt. Ocken, that the pole is surrounded by an open sea. The am. expedition (Hayes, May 1861) reached the northernmost known land of our planet— $81^{\circ} 35'$ —and could see along the coast to a point, $82^{\circ} 30'$ —which he named C. Union. There is believed to be a second passage, farther to the North, through Banks' Str. and Lancaster Sound; and a southern one, through Hudson Str.—Fox Channel—Fury and Hecla Str.—Boothia G. to Coronation G. The north-west passage, although thus demonstrated to exist, does not appear practicable as a better way from Atlantic to India, being nearly always blocked up by ice. If, however, Smith Str. or Sound, Kane's Sea, Kennedy Channel should be found an open way, and if the reports of Dr. Kane and Capt. Ocken should turn out to be correct, that a considerable central area of the arctic circle is occupied by a warmer ocean, free from ice—the long cherished hope of reaching the pole, may yet be accomplished; and, possibly, a shorter way discovered from Greenland, London and St. Petersburg to Behring Str. (Pl. I. L).

(456 A.) *Remark.* 1. There is no idea of abandoning polar expeditions. By sledges or ships; by governments or private munificence, the North Pole will *soon be reached*. A knowledge of the whole globe's surface has become a necessity of science. We must know every inch of Sahara—Australia—New Zealand—New Guinea—Patagonia—central Africa—the polar regions, and even the valleys of the ocean.

2. The U. S. Government has granted greater sums for geographical works than any government of Europe.

3. "The christian missionaries", says the German Year Book, "now scattered over the globe, have rendered important services to Geography; among them, Huc, Livingston, Krapf, etc. Their patient and long-persevering intercourse with half-known peoples and tribes, has advanced our knowledge of languages and of the different varieties of men." To this we add: their influence, on the cause of christian civilization, has been far more striking and useful.

PART IV.

OUTLINE VIEW OF PROVINCES RIVERS, TOWNS, ETC.

OF

SOUTH-WESTERN EUROPE.

(PL. V. AND PL. VI. B.)

(457.) *Remark.* We have now acquired an idea of natural land and water divisions, the names and positions of countries, towns, mountains, rivers, etc. We have not confined ourselves to our own, nor to other civilized countries. We have examined, with the same attention, the polar, the temperate and the equatorial zones; remote, savage lands, and waters scarcely known, as carefully, as those in our vicinity. We have taken a *bird's-eye view* of the globe's entire surface. Two regions — United States and Europe — require more particular study. And, first, *Europe*. In order better to understand Pl. VI. B., it is proper to glance slightly at the most striking territorial changes which this portion of the E. Continent has undergone; and briefly to review some of the great historical events which have caused them.

(458.) **Roman Empire.** — At the birth of our Saviour, the world may be said to have lived under the scepter of *one man*, the Roman emperor, Augustus Cesar, nephew of Julius Cesar. Following the authority of Gibbon, and sometimes using his words, we compress a very general account of the extent of his empire. It

comprehended the fairest part of the earth and the most civilized portion of mankind (Pl. III fig. 5 — also Pls. II and III). The northernmost bends of the Rhine, Danube and Carpathian Mts., formed its N. E. boundary, in Europe. In Asia, its frontier embraced Asia Minor, the territory S. of Caucasus, and a region, east, reaching to Caspian Sea and Persian G. Excluding the greater part of Arabia, it took in Palestine, the principal part of Egypt, and all the N. coast of Africa, known as Barbary States; on the N. W., England with Wales and the lowlands of Scotland to the Friths of Forth and Clyde (Pl. VI). The modern countries, standing upon the territory once occupied by the Roman Empire, are, Portugal, Spain, France, England, Belgium, Prussian Rhine Province, portions of Baden, Wurtemberg and Bavaria, Switzerland, Italy, southern provinces of Austria, including Hungary and Transylvania, Turkey in Europe and Greece, all Turkey in Asia, Egypt, Barca, Tripoli, with Fezzan, Tunis, Algeria and Morocco. The excluded adjacent countries are, Ireland, part of Scotland, Holland, Prussia, with the North German League (N. of the Main), Bohemia, Moravia, Galicia, Russia, etc. Arabia, on the S. E., remained also unconquered. The whole extent of the Mediterranean Sea, its coasts and islands, were comprised within the Roman dominion, which was, in breadth, more than 2000 miles, from the N. European frontier, south to Mt. Atlas and tropic of Cancer—in length, more than 3000 miles, from Atlantic to Euphrates. About as large as the United States of America, and nearly between the same parallels, it was situated in the finest part of the temperate zone, and, like the previous five consecutive world empires (Egypt, Assyria, Babylon, Persia and Greece or Macedonia), it comprehended, within its boundaries, that remarkable country, *Palestine* “which”, says Gibbon, “will live for ever in the memory of mankind, as, from its narrow limits, has issued forth the religion, adopted by all the civilized nations of the earth”. That country, less than 200 miles long,

by about 75 miles broad, forms, in our day, several Turkish pashalics, at the E. extremity of Mediterranean. Fig. 5. Pl. II. gives its "narrow limits", with lake Tiberias, river Jordan and Dead Sea.

No inferior animal has ever aspired to universal dominion over its fellow beasts. But, to use again the words of Gibbon, "*the ambitious desire of subduing the earth*" has been the favorite dream of great conquerors. Nebucadnezzar, Xerxes, Alexander, Cesar, Charlemagne, Napoleon—each, in his turn, has been dazzled by a splendid vision of "all the kingdoms of the world and the glory of them". During nearly a hundred years, Augustus and his successors the emperors Nerva, Trajan, two Antonines, etc.—may be said to have, in some degree, attained this coveted prize. The transitory heathen kingdom, which *man* had established, "by the might of his power and for the honor of his majesty"—"the city and tower whose top was to reach unto heaven"—had risen to its culminating point, at the moment, when a greater than man in the form of a friendless infant, scarcely admitted into the stable of a tavern, appeared upon the earth, to lay the everlasting foundation of the kingdom of God. This impressive antithesis is carried out during the whole life of our Redeemer, and, particularly, in his death. While the pure and lowly Jesus, the Savior of the world, who had never committed a sin, was extended on the cross, an atonement for mankind—Tiberias, the emperor of this present world, marked by the vilest vices and the basest qualities, was closing his life in the luxurious island of Caprea, sunk in infamous, disgusting debaucheries; and, by "his infernal machinations and crimes, exposing the life, the fortune and the honor of every Roman citizen".

(459.) **Fall of the Roman Empire.** — The Roman Empire (1) broke to pieces in the 4th century. The Persians, the Scythians, the Goths and other barbarians, attacked it at every point. Out of its immense

ruins, have risen the modern states of Europe. It is a singular circumstance, however, that it did not cease to have a political representative, from the time of Augustus to that of Napoleon I; and the plan of reviving it, in more than all its ancient power and glory, has never been permanently abandoned. This is one of the *secrets of history*.

(460.) **Germanic or Holy Roman Empire.** — Among the various political organisations, built upon the ruins of Rome, was *Germany*. Charlemagne was crowned, at Rome, by the Pope, Emperor of the West, or Emperor of the Romans (A. D. 800). His successors kept up this title about 160 years (A. D. 962), when it vested in the emperor of Germany, thenceforth designated, monarch of the *Holy Roman Empire*. The second head was added to the eagle, in order to denote the union of the empires of Germany and Rome. From this time, and through the subsequent period of a thousand years, the Empire of Germany was styled, the Holy Roman Empire. At the breaking out of the great french revolution (1789), its territories were divided into 10 Circles (Pl. V. A. Fig. 1).

(461.) **French Revolution — Napoleon I.** — Under the reign of Louis XV, king of France, the vices of the king and court, the oppressions of the people, the general spread of infidelity, etc., produced a revolution, the most terrific recorded by history. One might almost infer that the great crises of human affairs grow, in intensity, like the plutonic irruptions of our planet (281). The outbreak reached its height under Louis XVI. who, with his queen, was beheaded. It deluged France with the blood of the scaffold, and devastated Europe with wars. Out of the stormy billows of these political disorders, rose that young officer, Napoleon Bonaparte, one of the most remarkable men, and the greatest soldier, of any age, whose brilliant military genius, and unbounded ambition, nearly

succeeded in reducing Europe, and the adjacent parts of Asia and Africa, under his scepter; and in thus reviving the magnificent empire of the Cesars. By his victories over Austria (Marengo, 14. June, 1800,—Austerlitz, 2. Dec., 1805) and over Prussia (Jena, 14. Oct., 1806) he overturned the old Germanic or Holy Roman Empire, already tottering into decay. He created, for his brother Jerome, a new kingdom, Westphalia; and raised, other members of the Germanic Confederation, into independent sovereigns, united by a league, called the *Confederation of the Rhine*. Under these circumstances, the German Emperor, Francis II, by a communication (Aug. 6, 1809) addressed to the great Powers of Europe, officially renounced the title of *Emperor of Germany and of the Holy Roman Empire*, which his ancestors had worn for a thousand years, and assumed the title, Emperor of Austria. "The Emperor of Germany" says Alison, in his History of Europe, "thus ceased to be the representative of the empire of the Cesars". Napoleon had already ascended to this lofty pre-eminence. He had been crowned Emperor of France, by the Pope, (Dec. 2, 1804). He then exacted that he should be crowned, again, King of Italy and Rome, with the iron crown of Charlemagne, as the new representative of the empire of the Cesars, and, consequently, a monarch higher than all the other monarchs of the earth. The ceremony took place at Milan (1805). The haughty conqueror seized the crown and placed it upon his own head, thus intimating that he reigned by his own power; at the same time, uttering the words: "*God has given it to me. Beware who touches it!*" The Roman States were annexed to France, and the heir apparent of the french throne was invested with the title of King of Rome.

(462.) **Treaties of Vienna.** — The fall of Napoleon Bonaparte was more sudden even than his rise. His splendid fabric was dashed to pieces at Moscow, Leipsic and Waterloo; and he was confined at St.

Helena, a rock in the Atlantic, where he died a broken-hearted prisoner (1821). The victorious monarchs of Europe met, by thier representatives, in a Congress at Vienna (1815), and, by those celebrated documents, called *the Treaties of Vienna*, gave, to the European countries, the political frontiers which, with some exceptions, continued to be their limits until 1866.

(463.) **Changes since Treaties of Vienna.** — Italy, by these treaties, was occupied by seven independent monarchies or states, (Pl. V. B. fig. 2. — sec. 482), while the beautiful plains of Lombardy and Venice, in northern Italy, were given to the then triumphant Austria. Belgium and Holland were united into one kingdom; and Greece was left under the Turkish scepter. By the revolution of 1830, Belgium was separated from Holland and erected into an independent kingdom; and the Italian war of 1859, (in which France and Sardinia, by the victories of Magenta and Solferino, drove Austria entirely out of Italy) erected the whole Italian Peninsula into one kingdom and, finally, brought Lombardy (1859) and then Venice (1866) under the scepter of Victor Emanuel. A very small region was left with the name of *Papal Territory* (Pl. VI. B) which the now united and powerful people of Italy desire to incorporate as the capital of their kingdom. To these changes, must be added the revolution, by which Greece (1829) threw off the Turkish yoke; the elevation of the Turkish provinces, Moldavia and Wallachia (known as the Principalities of the Danube), to the rank of a nation (1866); and, greatest of all, the resurrection of Napoleonism (Dec. 2, 1851), when Louis Bonaparte (Napoleon III.) seized the imperial sceptre; thus overthrowing the public law of Europe, as founded on the treaties of Vienna.

(464.) **Germanic Confederation from 1815 to 1866.** — By the treaties of Vienna (1815) Germany was reconstructed in such a way as to consist of

38 states, and, with few essential changes, it so remained till 1866, at which time, three had been merged into others, leaving only 35. Holland was a member of the Confederation, for two of her provinces—Luxemburg and Limburg; Denmark, also, for Holstein, with Lauenburg. The Germanic Confederation (marked by a red line Pl. VI. B) then extended from North Sea and Baltic, to Adriatic. It was bounded, N. by North Sea, Denmark (Schleswig), and Baltic; E. by non-German Prussia, Russia, and non-German Austria; S. by Adriatic, Venetia and Switzerland; W. by Venetia, Lombardy, Switzerland, France, Belgium and Holland. (R. these boundaries again from Pl. V. A). The states of the Confederation were distinguished by 8 different forms of Government, namely: 1 Empire, 5 Kingdoms (exclusive of Denmark and Holland), 7 Grand Duchies, 9 Principalities, 1 Electorate, 1 Landgraviate, and 4 Free Cities. A glance at Pl. V. A, will, in a few moments, acquaint the attentive student with the names, relative size and position of the German States (Pop. 46 millions). It was of this Plate that Alex. v. Humboldt said: "Perhaps no map ever did make Germany so clear."

(465.) **List of German States before 1866 —**

One Empire. — Austria.

Five kingdoms. — Prussia — Saxony — Bavaria — Wurtemberg — Hanover.

Seven Grand-Duchies. — Baden — Hesse-Darmstadt — Luxemburg with Limburg — Oldenburg — Mecklenburg-Schwerin (Shway-reen') — Mecklenburg-Strelitz (straylitz) — Saxe-Weimar (wī-mar).

Seven Duchies. — Nassau — Brunswick — Holstein, with Lauenburg — Anhalt (formerly Duchies of Bernburg, Koethen (curten), and Dessau) — Saxe-Altenburg — Saxe-Meiningen — Saxe-Coburg-Gotha.

Nine Principalities. — Reuss-Greiz (itze) — Reuss-Schleitz (itze) — Schwartzburg-Rudolstadt

— Schwartzburg-Sondershausen — Schaumburg Lippe — Lippe-Detmold — Waldeck — Hohenzollern — Lichtenstein (lik'-ten-stīne), on the eastern frontier of Switzerland.

One Electorate. — Hesse-Cassel.

One Markgraviate. — Hesse-Homburg (near Frankfort — very small).

Four Free Hanse Towns. — Frankfort-on-the-Main (seat of the Germanic Diet) — Bremen — Hamburg — Lubeck.

(466.) **Thuringian States.** — This name is given to the following (Pl. V. A): G. D. Saxe-Weimar — D. Saxe-Coburg-Gotha — D. Saxe-Meiningen — D. Saxe-Altenburg — P. Schwartzburg-Rudolstadt — P. Schwartzburg-Sondershausen.

(467.) **Hanse Towns** — called also the Hansa, and Hanseatic League. In the Middle Ages, Germany, and the neighboring seas, were infested with tyrannical feudal chiefs, banditti, pirates, etc. Many towns, among others those we have mentioned, entered into a commercial alliance for mutual defence, under this name. The number of towns is said to have once amounted to 85. The alliance was dissolved about 200 years ago; but Hamburg, Bremen, Lubeck and Frankfort-on-the-Main, still continued in somewhat similar relations, and were called the free Hanseatic cities of the Germanic Confederation.

(468.) **Prussia, with North German League, after civil war 1866.** — Plate V. A. and VI. B. show Prussia before this war. Her disjointed territory lay, it has been said, like a pair of garters, on a table. As it consisted of several fragments, it might better be likened to a plate fallen upon the floor, and broken to pieces. Between the two provinces, Westphalia and Rhine Pr. and the rest of her territory, nearly all the small German States intervened; so that, in this respect, she could be re-

garded but as a very weak Power. Now mark the changes *after the war* (Pl. V.B). Five of the intervening States—one of them, a considerable kingdom—have been incorporated into her territory, namely: Kgd. Hanover—Electorate Hesse-Cassel—D. Nassau—Free City Frankfort-on-the-Main, and Landgraviate Hesse-Homburg. Not only D. Holstein, but the adjacent Danish D. Schleswig are annexed. Twelve States or Free Cities, beside those called Thuringian States, if not incorporated, at least have been induced to enter into close subordinate relations with her, under the name of North German League. They lie wholly, or in part, enclosed within her territory, and are: Kgd. Saxony—G. D. Mecklenburg-Schwerin—G. D. Mecklenburg-Strelitz—G. D. Oldenburg—Northern half of G. D. Hesse-Darmstadt—D. Brunswick—D. Anhalt—P. Lippe—P. Waldeck—Thuringian States (466) including the adjoining states of Reuss—Free Cities Hamburg—Bremen—Lubeck.

It requires only a glance at the maps to perceive the consequent aggrandizement of Prussia. Situated in the center of Europe—with a population of 29 millions—a compact territory—an unbroken frontier on every side—a perfect military organisation—a largely increased coast-line both on Baltic and North Seas—Lubeck, Hamburg, Bremen, converted almost into Prussian ports—she has become one of the greatest Powers of the world.

The rest of the states, members of the Germanic Confederation before 1866, and having opposed Prussia in the war, namely, G. D. Baden, kgd. Wurtemberg, kgd. Bavaria, southern half of G. D. Hesse-Darmstadt, i. e., the half S. of River Main, and P. Lichtenstein, do not form part of North German League. But they have entered into treaties, offensive and defensive, with the king of Prussia, stipulating, in case of war, to invest him with the command of their troops. We may well presume that these political ar-

rangements are not permanent. It is necessary, however, that they should be understood by every attentive observer. While Prussia has risen to this great political pre-eminence, Austria has suffered a series of misfortunes which have threatened almost her existence. By the Italian war of 1859 she lost Lombardy; by the war of 1866, the territory of Venetia; and she was compelled to retire before the supremacy of Prussia as a German Power. This is not the place to point out the probable consequences of these great changes. Many believe that Austria has still vitality and allies enough to procure indemnification for her losses, on her south-eastern frontier (Pl. VI. B.); thus precipitating the banishment of the Ottoman Power from Europe; and rendering the dreaded Turkish question, not only more urgent, but more complicated.

COUNTRIES AND PROVINCES OF SOUTH- WESTERN EUROPE.

(469.) Our purpose in presenting Pl. V. A. and B. and Pl. VI. B. is:—1. To give the limits of the German States (Pl. V. A), as they existed from 1815 till 1866. 2. A view of the reconstructed Germany, as far as it has proceeded, since the dissolution of the Germanic Confederation. 3. A somewhat nearer view of the rivers, towns and exterior waters of Great Britain and Ireland. 4. The great historical provinces of Portugal, Spain, France, Prussia, Austria, Roumania, Turkey in Europe, Greece, Italy, and Switzerland; with a nearer view of their towns, and rivers, including Belgium and Holland. In the wars which have already taken place, and those which may be hereafter expected, territorial changes are frequently made, are often the objects of the wars, and are best understood by those

who have studied the names, relative positions, and antecedents of *historical provinces*. Thus, 1860, after the Italian war, France annexed the Italian provinces of Savoy and Nice, by the consent, most reluctantly extorted, of the government of Italy, and not without awakening a deep feeling of resentment, on the part of the Italian nation; for Savoy is the key to Italy. At the same time, Italy took Lombardy from Austria. One of the first results of the late civil war in Germany, was the cession of Venetia to the king of Italy. The erection of the two provinces, Moldavia and Wallachia, into what may be called an independent kingdom, seems to be the forerunner of greater changes in the Ottoman Empire. The province of Luxemburg—that portion of Holland, for which its sovereign was member of the Germanic Confederation till 1866—till the question was settled by a European Conference (London, May, 1867) threatened to become the occasion of a general war. It would be superfluous to give the provinces of all countries; but it is deemed important that the intelligent young American student should have a clear view of the subdivisions of this part of the world, whose great approaching changes attract the attention of thinking men.

(470.) **Provinces of Portugal.** — Minho — Tras-os-Montes — Beira — Estremadura — Alentejo — Algarve. — *Insular Provinces:* Azores — Madeirairas.

Remark. Of Portugal, Spain, France, and Turkey, we give the names of historical provinces still retained in those countries, although these ancient divisions, for administrative purposes, have been subdivided into departments, etc. (in Turkey, into *eyalets* or *pashalics*).

(471.) **Provinces of Spain.** — *On Atlantic:* Andalusia — Galicia — Asturias — Old Castile — Basque Provinces (Biscaya, Guipuzcoa, Alava) — *On France:* Basque Provinces again — Navarre — Aragon — Catalonia. — *On Mediterranean:* Cata-

lonia again — Valencia — Murcia — Granada — Andalusia again — *On Portugal*: Andalusia again — Estremadura — Leon. — *Central Province*: New Castile (Madrid). — *Insular Provinces*: Balearic Is. — Canary Is.

(472.) **Basques Provinces.** — This term is omitted in the Plate, in order to avoid the confusion of crowded names. The three small provinces, comprehended under it, are Biscaya or Vizcaya — Guipuzcoa — and Alava. The Basques are celebrated for their courage and energy, and form the best soldiers and sailors of Spain. They boast that, not only no Arab steed has ever stamped upon their soil, but that, though the most ancient representatives of the Spanish race, neither Carthaginian, Roman, Goth nor French, has ever subdued them, or even corrupted their language, which they declare to be that used by Adam and Eve in Paradise. In the 13th century, they voluntarily became subjects of the Queen of Castile, reserving, however, many inviolable rights. They enjoy a considerable independence, a diet, judiciary, laws and a representation of their own. In fact they form a kind of independent government. For 1300 years, their parliament has been held near an old oak at Vizcaya.

(473.) **Provinces of France.** — *On English Channel*: Brittany or Bretagne — Normandy — Picardy — Artois — Flanders. — *On Belgium and Germany*: Flanders (again) — Champagne — Lorraine — Alsace. — *On Switzerland*: Franche-Comté — Burgundy (Bourgogne) — Savoy. — *On Italy*: Savoy (again) — Dauphiné — Provence — Nice — *On Mediterranean Sea*: Provence (again) — Languedoc — Roussillon — I. of Corsica. — *On Spain*: Roussillon (again) — Foix — Gascony — Béarn. — *On Bay of Biscay*: Gascony (again) — Guienne — Saintonge — Poitou with Vendée. — *Central Provinces*: Anjou — Maine — Orléanais — Isle de

France (Paris)—Nivernais—Bourbonnais—Lyonnais—Auvergne—Limousin—Angoumois—La Marche—Berry—Tourraine.—

(474.) **Provinces of Prussia** (Pl. V. A) — may, at present, be divided into two classes, namely, the 9 original provinces before 1866 — and the 7 provinces subsequently annexed. *Nine original provinces:* Pomerania — West and East Prussia — Posen (Prussian Poland) — Silesia (Prussian) — Saxony (Prussian) — Brandenburg — Westphalia — Rhine Province — Hohenzollern — the latter added at a later period, quite isolated in the S. of Germany. *Seven provinces subsequently annexed:* Kgd. Hanover — Electorate Hesse-Cassel — Free territory and city of Frankfurt-on-the-Main — D. Nassau — Landgraviate Hesse-Homburg — German Duchy Holstein with Lauenburg — Danish Duchy Schleswig. (Now see Pl. V. B).

(475.) **Provinces of Austria** (Pl. V. A and B and Pl. VI. B) — before 1859 might be grouped as follows: 1. German provinces. 2. Non-German provinces. 3. Italian provinces. *German provinces:* Bohemia — Austrian Silesia — Moravia — Upper Austria — Lower Austria — Styria — Salzburg — Tyrol with Vorarlberg — Carinthia — Carniola (with Istria, Goritzia, and the town and territory of Trieste). — *Non-German provinces:* Galicia with Cracow — Hungary with Banat — Bukowina — Transylvania — Slavonia — Croatia — Military Frontier — Dalmatia. — *Italian provinces:* Lombardy and Venetia (the latter two now ceded to Italy).

(476.) **Coast Land—Littorale—Kgd. Illyria.** — These terms were once, and are sometimes yet, applied, to the Duchies of Carniola, Carinthia, Istria, etc., with the town and territory of Trieste.

(477.) **Magyar Provinces.** — Hungary and Transylvania are so called.

Remark. The subdivisions of Austria, since the revolution of 1848, have undergone so many changes that, says Daniel, "they are enough to drive any geographer to desperation."

(478.) **Provinces of Roumania.** — Valakhia — Moldavia.

(479.) **Provinces of Turkey in Europe.** — Bosnia with Turkish Croatia and Herzegovina — Servia — Bulgaria with Dobrodja — Roumelia (ancient Macedonia and Thracia) — Albania with Thessaly — Montenegro — Jezayr (Dschesair), or the "Islands" — Candia or Crete.

Remark. The existence of Turkey in Europe appears drawing to a close. Many of its nominal provinces are in fact independent — particularly Egypt.

(480.) **Provinces of Greece.** — Roumelia — Morea or Peloponnesus — Ionian Islands — Grecian Archipelago.

Remark. — 1. — That part of present kingdom of Greece, called *Rumelia*, was, under the Turkish government, *Livadia*; among the ancient Greeks, *Hellas*. It is not necessary here to give the administrative subdivisions.

2. — The Archipelago, or islands in the Aegean Sea, between the mainland of Greece and Asia Minor, are, on the map, distinguished, from the Turkish islands, by a red line. Pl. VI. B.

(481.) **Cyclades — Sporades.** — Observe (Pl. VI. B.) a group of islands, lying on the east coast of Greece, somewhat in parallel lines. They may be regarded as insular prolongations of Euboea and Roumelia. Among them are: Delos, Syra. They are called the *Cyclades* (sik'-la-deez), from a Greek word, a *circle* — because they closely encircle the little I. of Delos. The rest of the islands of the Archipelago,

both grecian and turkish, are called the *Sporades* (spor'-a-deez), from a Greek word, *scattered*—because they lie scattered around the Cyclades. Among them are: Euboea or Negropont, Hydra, Aegina, etc.

(482.) **Subdivisions of Italy from 1815 to 1859** (Pl. V. B. fig. 2). — Kgdm. Sardinia (including D. Savoy, P. Piedmont, D. Genoa, County Nice, and I. of Sardinia)—D. Parma—D. Modena—D. Lucca—G. D. Tuscany—Papal States, enclosing the little rep. San Marino—Kgdm. Naples with Sicily. The Lombardo-Venetian kingdom formed part of Austria.

(483.) **Present Provinces of kingdom Italy** (Pl. VI. B). — Piedmont—Lombardy—Venetia—Emilia—Marca—Umbria—Tuscany—Naples or Lower Italy—I. of Sicily—I. of Sardinia.

Remark. The Papal Territory has not yet (April 1867) been included among the provinces of Italy.

(484.) **Cantons of Switzerland** (Pl. V. B). — Switzerland consists of 22 cantons — french, german and italian. — Bern—Soleure (so-lur') — Basel—Aargau — Zurich (zu'-rik) — Schaffhausen — Thurgau (toor'-gow) — St. Gall — Appenzell — Grisons — Ticino (te-chee'-no) — Valais — Geneva — Vaud (vō) — Neufchatel (nush-ah-tel') — Freyburg (fri'-boorg) — Lucerne (lu-sern') — Zug (zoog) — Schwytz (shweetz)—Glarus (glar'-roos) — Uri (u'-ree) — Unterwalden.

Remark. Where names of town and canton are identical, the former, alone, is sometimes given.

RIVERS AND TOWNS OF SOUTH-WESTERN EUROPE.

(PL. VI. B.)

(485.) **Chief Rivers of England.** — Thames — Severn with Upper and Lower Avon — Mersey

—Eden—Tyne—Humber, with its affluents Ouse (ooz) and Trent—Great Ouse.

(486.) **Chief Towns of England and Wales.** — We first name some great sea and riverports. London—Dover—Brighton—Portsmouth—Southampton—Cowes—Exeter—Plymouth—Falmouth—Bristol—Swansea and Pembroke (Wales)—Chester—Liverpool—Lancaster—Carlisle—Newcastle-upon-Tyne—Sunderland—Hull—Yarmouth—Colchester. Now we name some of the chief interior towns. Bradford—Leeds—York—Bolton—Manchester—Sheffield—Lincoln—Shrewsbury—Derby—Nottingham—Wolverhampton—Birmingham—Leicester—Norwich—Worcester (Woo'ster)—Oxford—Cambridge—Bath—Canterbury—Merthyr - Tydvil (Wales). Towns on the following rivers, beginning at the source. *On Thames:* Oxford—London—Greenwich (celebrated for its royal observatory, from which longitude is often measured). *On Severn:* Shrewsbury—Worcester. *On Upper Avon:* Stratford (the birthplace of Shakspeare, who is therefore often called the Swan of Avon). *On Mersey:* Manchester—Liverpool. *On Eden:* Carlisle. *On Tyne:* Newcastle-upon-Tyne. *On Humber and its affluents Ouse and Trent:* Hull—York—Leeds. (for Wales, see 521 A.)

(487.) **Chief Rivers of Scotland.** — Tweed—Forth—Tay—Dee—Ness—Clyde.

(488.) **Chief Towns of Scotland.** — Berwick—Edinburgh—Dundee—Aberdeen—Inverness—Paislay—Glasgow—Dumbarton. What towns lie on the following rivers? *On Tweed?* Berwick. *On Forth?* Edinburgh. *On Tay?* Perth—Dundee. *On Dee?* Aberdeen. *On Ness?* Inverness. *On Clyde?* Paisley—Glasgow—Dumbarton.

(489.) **Chief Rivers of Ireland.** — Liffey with Dublin Bay—Suir (shure) with Waterford Harbor — Blackwater—Lee—Shannon—Corrib (River and Lake) with Galway (gawl'-way) Bay.

(490.) **Chief Towns of Ireland.** — *Sea and river-ports:* Dublin—Waterford—Cork with Queens-town—Limerick—Galway—Londonderry—Belfast.—*Interior towns:* Tipperary—Killarney.

(491.) **Rivers of European Continent.** — We review these rivers, adding some of the more important, not previously named, for the purpose of studying their relations to the countries and towns (Pl. VI. B). *Into Atlantic:* Guadalquivir — Guadiana — Tagus — Douro—Minho.—*Bay of Biscay:* Gironde (with Dordogne and Garonne)—Loire. *English Channel:* —Seine.—*North Sea:* Sheldt (Scheld)—Meuse or Maas (with its mouths)—now Pl. V. A and B—Rhine (with its 4 principal branches—right bank: Neckar—Main; left bank: Aar—Moselle)—Weser—Elbe (with its branches Havel and Spree).—*Baltic:* Oder—Vistula—Niemen—(now Pl. II) Duna—Neva—Tornea.—*White Sea:* Dwina. *Arctic Ocean:* Petchora.—*Caspian Sea:* Ural—Volga.—*Sea of Azof:* Don.—*Black Sea:* Dnieper—(Pl. VI.) Dniester—Danube, (with its branches—left bank: Theiss (tīce) and Pruth (proot); right bank: Isar—Inn—Drave and Save).—*Adriatic:* Po.—*Tyrrhenian or Tuscan Sea:* Tiber—Arno.—*G. of Lions:* Rhone (with its branch Saone (sown).—*Mediterranean:* Ebro.

(492.) *Remark.* 1. The Isar is the national river of Bavaria, having in all times, from its source to its mouth, belonged to the Bavarians. Its banks are rich in fruit and its basin is the principal seat of the old Bavarian population.

2. As the teacher reads the three next sections, very slowly, the pupil will follow each place on the proper map or maps.

(493.) **The Rhine** — sometimes called by the Germans *Father* or *King Rhine*, is often said to spring from three small streams, the *Vorder Rhine* — the *Hinter Rhine* and the *Middle Rhine*. In reality it originates in a large number of mountain-torrents, each bearing its name. It is the “highest born” of the German streams, rising in the Swiss Alps, near Mount St. Gothard, about 7000 feet above the sea. It is more than 800 miles long, and its depth varies from 20 to 50 feet. It flows, after various bends, in a N. W. direction, into North Sea. — Examine Pl. V. B. and see what states or territories it passes through or between. After traversing a part of Switzerland, it forms, with the broad Lake Constance, into which it expands, the boundary line between Switzerland, on the one side, and Austria, Bavaria, Wurtemberg and Baden, on the other. Then, flowing directly N., it forms the boundary line between France and Baden; thence, intersecting several small German States, it sweeps through the Prussian Rhine-Province and Holland, pouring its waters into North Sea, through a number of broad arms or estuaries which enclose an extensive delta. The River Meuse or Maas, unites its waters with those of the Rhine, in this part of its course; and, strange to say, the principal channels of entrance to the Rhine bear the name of the “mouths of the Meuse”; — while the Rhine preserves its name only in an insignificant stream, called the Old Rhine, which reaches the sea near Leyden. It is navigable, for tolerably large vessels, as far up as Strasburg; for smaller steamers as high as Basel; and boats ascend some distance higher, to Schaffhausen. No German river is so much visited by tourists. In Switzerland, its scenery is sublime. Its impetuous waters rush through the valley of the Rhine, surrounded by the most picturesque crags and lofty alpine peaks. Between Mayence (or Mainz) and Cologne, in the Pr. Rhine Province, the scenery is particularly celebrated. Beautiful mountains and rocks crowd around the river

shores, which are scattered with rich vineyards, towns, valleys, churches, etc. Sometimes, the mountains rise in an amphitheatre, capped with the ruins of ancient towers and castles, connected with which are the most romantic legends and interesting, historical associations. At other points, they open into delicious valleys, through which numerous affluents flow, swelling the waters of the parent river. The navigation of the Rhine is of great and increasing importance. Perhaps no river is more closely connected with the political state of Europe. The French appear to consider it their natural boundary. Upon this point there is a deep susceptibility on the part both of the German and French nations. This river was first made known to the civilized world by Julius Cesar, who twice crossed it in his wars with the Germans.

(494.) **The Danube** — the second in magnitude among european rivers — rises in Baden, one of its sources being enclosed within the court of a castle, in the small town of Donaueschingen (do'now-esh'ing-en). It thence flows through Wurtemberg, Bavaria, Austria, Roumania and Turkey; becomes part of the boundary line between the two latter States; and enters the Black Sea by several channels, forming a large marshy delta. Near its mouth, in consequence of sand-banks and other obstacles, there are difficulties in the navigation, which have occasioned many disputes between Turkey and Russia. The region, on the right side of the Danube, called the Dobrodja — a pestilential tract — has recently been the seat of Russian and Turkish warfare. The scenery is highly diversified. Sometimes the river rolls along among beautiful eminences, like those of the Rhine, crowned with picturesque ruins — sometimes it washes the rocky angles of precipices and mountains — sometimes, in many circuits, meanders over vast level plains. Here, it is divided into numerous channels, enclosing marshy islands — there (as on the borders of Hungary and

Roumania, at the point called the "Iron Gate"), it rushes, with deafening noise, through a deep defile, breaking into a series of minor cataracts. Sometimes narrow — sometimes wide — its movement is now dangerously rapid — now measured and slow. It is, nevertheless, navigable through the greater part of its course, though the navigation is often obstructed by rocks, shoals, and whirlpools. It has been described, by a German writer, Biffard, to resemble "a beautiful, intelligent, coquettish woman, full of changes and contradictions. Now, she advances silently, as if lost in reverie — now, she overflows with sparkling mirth. At one moment, she is full of humors and caprices — at another, she proceeds with dignity and reflection. But have a care! — trust her not! Where she is the least deep to-day, to-morrow, we cannot fathom her; and, after years of attentive examination, we know as little of her real character, as in the first hour of our acquaintance".

The limits of this work do not permit an examination into the political importance of the Danube. From various circumstances, it has been, and still is, closely connected with the interests of Europe. "While the other great rivers", says the American Cyclopaedia, "flowing in a northerly or southerly direction, formed barriers against the invasions of savage nations, the Danube, on the contrary, served as a highway from East to West. Hence, the ebb and flow of the great migration of nations, subsequent to the downfall of the Roman Empire, were the strongest in the basin of the Danube, and, for long centuries, the fate of European civilization depended on the contest of races, in that portion of the continent."

(495.) **The Main** (Pl. V. A and B). — We have departed from our general plan in giving a more detailed account of the Rhine and the Danube, because of the commercial, historical and political importance of those streams. They are examples of rivers by the influences of

which Europe has taken the lead in civilization. The River Main must not be passed over without a few words. It is the most considerable branch of the Rhine, flowing, for many miles, through a mountainous country, which would otherwise be, in a great degree, closed to commerce and ideas. It opens a communication with the south-western sources of the Weser; and, what gives it a still higher value, connects the basins of the Elbe, the Rhine, the Neckar and the Danube. By its westerly course, and connection with the Rhine, it also opens central Europe to the N., the W. and the E. Moreover, Germany is divided by it into N. and S. Germany. It has its source in Bavaria. Traversing the northern portion of that kingdom, it grazes the southern frontier of Hesse-Cassel, intersects the territory of Frankfort, leaving the city of Frankfort on its right or north bank, cuts the G. D. Hesse-Darmstadt into two, almost equal, parts; and then, advancing between the southern part of Hesse-Darmstadt and the D. Nassau, enters the Rhine at Mainz (or Mayence). Now remark the southern limits of the new North German League, on Pl. V. B, and we see an instance of the influence which a river may exercise on political events, arresting the advance of conquering armies and determining, at least for a time, the extent of territories. The south limits of the new N. German League nearly follow the course of that river. Thus may be explained the fact that Germany has been broken into two parts. The new and greatly strengthened Prussia had reason to believe she would not be permitted to pass below the Main, and become sole possessor of that important international highway. Hence, the south limits of the Prussian League, following the course of the Main, take in only the Thuringian States—Hesse-Cassel, the northern half of Hesse-Darmstadt and Nassau—leaving out Baden, the southern half of Hesse-Darmstadt, Wurtemberg and Bavaria. It may be added that, in territorial arrangements, the lower portion of the river has generally been separated

from the upper. Segments of the Rhine and the Danube formed boundary lines of the old Roman Empire, whose frontiers intersected the Main. Distance, in a direct line, from source to mouth, about 157 miles; but its windings, more peculiar and extensive than those of any other German river, measure 360 miles.

(496.) **Towns of Portugal.** — *Seaports:* Oporto — Lisbon — Setubal, or St. Ubes — Lagos. *Interior towns:* Braganza — Braga — Almeida — Coimbra. Name rivers of Portugal. What town on Tagus? On Douro?

(497.) **Towns of Spain.** — *Seaports on Mediterranean:* Barcelona — Tarragona — Castellon-de-la-Plana — Valencia — Alicante — Cartagena — Almeria — Malaga — Gibraltar (British fortress and town) — Tarifa. *On Atlantic:* Cadiz — Santa Maria — Xeres — Palos — Coruna — Ferrol. *On Bay of Biscay:* Gijon (he-hon') — Santander — Bilbao or Bilbao — San Sebastian. *Towns not seaports nearest Atlantic and Bay of Biscay:* Santiago — Oviedo — Astorga — Leon — Palencia — Valladolid — Burgos. *Nearest the Pyrenees frontier:* Pamplona, or Pampeluna — Saragossa — Lerida — Gerona. *Nearest Mediterranean:* Tortosa — Murcia — Granada — Cordova — Sevilla. *Nearest Portugal:* Badajos — Alcantara — Ciudad Rodrigo — Zamora. *Central Towns:* Segovia — Escurial — Madrid — Cuenca — Albacete — Aranjuez — Toledo — Talavera. *Towns of the Insular Provinces:* Palma on Majorca — Port-Mahon, capital of Minorca — Santa Cruz, capital of the Canary Is. — Iviza, on I. of Iviza.

Remark. 1. Palos was the port from which Columbus sailed (1492); and to which he returned, after having discovered the New World. At the gates of the convent, *La Rabida*, in the neighborhood of Palos, he had once begged a crust of bread. The ruins of the convent yet remain.

2. From Santa Maria, is exported the celebrated *sherry*

wine, the name of which is a corruption of *Xeres*, where it is chiefly manufactured.

Name rivers of Spain? Towns on or near the Guadalquivir? on or near the Tagus? on the Ebro?

(498.) **Towns of France.** — *On Mediterranean (seaports):* Monaco—Nice (neess)—Antibes (an-teeb)—Frejus—Toulon—Marseilles—Cette. *Nearest Spain:* Perpignan — Pau (pō). *Bay of Biscay (seaports):* Bayonne with Biarritz—Bordeaux (Bor-do')—Rocheport—La Rochelle—Nantes—L'Orient Brest. *British Channel (seaports):* Cherbourg (Share-burg)—Caen (Kan)—Rouen (Roo-en)—Havre (Hah'-vre)—Dieppe—Boulogne (boo-lon'). *On Strait of Dover:* Calais—Dunkirk. *Nearest Belgium:* Lille—Arras (Ar-rah)—Cambray—Laon—Rheims (rīmes). *Nearest Luxemburg, Rhine Province, Rhenish Bavaria and Baden:* Metz—Nancy—Strasbourg—Mulhausen, or Mulhouse. *Nearest Switzerland:* Besançon (Be-san-son). *Nearest Italy:* Chambery—Grenoble. *Interior towns:* Aix (Aeks)—Avignon—Nimes (neem)—Montpellier—Narbonne—Toulouse—Perigieux—Angoulême—Limoges—Poitiers—Angers—Tours—Le Mans. Fontainebleau (blō)—Paris with Versailles—Amiens—Châlons (sha-long)—Troyes—Dijon—Autun—Lyon—Vienne—Valence—Etienne—Clermont—Moulins—Bourges—Orleans. What french towns on Garonne? on Loire? on Rhone? on Rhine?

(499.) **Towns of Belgium.** — Antwerp — Malines or Mechlin—Brussels with Waterloo—Louvain—Liège—Namur—Mons—Ghent—Bruges—Ostende. Name rivers of Belgium. What towns on the Scheldt? Meuse?

(500.) **Towns of Holland.** — Groeningen—Zwolle—Arnhem—Utrecht—Nymvegen, or

Nimeguen — Dort — Rotterdam — Hague — Leyden — Amsterdam — Haarlem — Maestricht — Luxembourg (in Prov. Luxg. Pl. V. A). What dutch towns on Rhine? Meuse or Maas?

(501.) **Towns of Denmark.** — Copenhagen — Elsineur (*on I. of Seeland*) — Odensee — (*on I. of Funen*) — Aalborg — Aarhus.

(502.) **Towns of Prussia.** — Name 16 present provinces of Prussia (Pl. V. A and B). *Pomerania*: Stralsund — Putbus — Stettin — Colberg. *W. and E. Prussia*: Dantzic — Elbing — Königsberg — Tilsit — Memel — Insterburg — Thorn. *Posen or Prussian Poland*: Posen — Bromberg. *Prussian Silesia*: Goerlitz — Liegnitz — Breslau — Neisse — Glatz. *Prussian Saxony*: Magdeburg — Wittenberg — Torgau — Halle. *Brandenburg*: Brandenburg — Berlin — Spandau — Potsdam — Custrin — Frankfort-on-the-Oder. *Westphalia*: Minden — Bielefeld — Munster. *Rhine Province*: Crefeld — Elberfeld — Dusseldorf — Cologne — Aix-la-Chapelle — Bonn — Coblenz — Kreutznach — Treves. *Hohenzollern*: Hechingen — Sigmaringen. *Hanover*: Hanover — Goettingen. *Hesse-Cassel*: Cassel. *Frankfort-on-the-Main*: Frankfort-on-the-Main. *Nassau*: Wiesbaden — Ems. *Hesse-Homburg*: Homburg. *Holstein with Lauenburg*: Rendsburg — Kiel — Gluckstadt — Altona. *Schleswig*: Flensburg — Schleswig.

(503.) **Towns of the other States united in new North German League.** — *Mecklenburg-Schwerin*: Rostock — Schwerin — Ludswigslust. *Mecklenburg-Strelitz*: Strelitz. *Oldenburg*: Oldenburg. *Northern half of Hesse-Darmstadt*: Giessen. *Brunswick*: Brunswick. *Anhalt*: Dessau. *Waldeck*: Arolsen. *Lippe-Detmold*: Detmold. *Lippe-Schaumburg*: Bückeburg. *Schwarzburg-Rudolstadt*:

Rudolstadt. *Schwarzburg-Sondershausen*: Sondershausen. *Thuringian States*: Altenburg—Weimar—Gotha—Eisenach. *Saxony*: Leipzig—Dresden—Freiberg—Chemnitz. *Free Cities*: Bremen—Hamburg—Lubeck.

(504.) **Towns of the South German States.** — *Baden*: Mannheim — Heidelberg — Carlsruhe — Baden-Baden—Constance—Freiburg. *Wurtemberg*: Stuttgart. *Bavaria*: Wurzburg—Bamberg — Nuremberg — Ratisbon—Ulm—Augsburg — Landshut—Passau—Munich. *Rhenish Bavaria*: Speyer (or Spire, Spires)—Landau. *Hesse-Darmstadt*: Mentz (or Mainz—Fr. Mayence)—Darmstadt—Worms.

(504 A.) *Remark.* 1. *Rhenish Bavaria.*—The little territory, on the right bank of the Rhine, sometimes called the *Palatinate*, because it formed part of one of the old circles of Germany, bearing that name before the French revolution of 1789 (Pl. V. A. fig. 1), is now a province of Bavaria.

2. *Speyer.*—The name, *Protestant*, originated at the Diet held in Spires (1529). The Roman Catholic members, acting for the Pope and the Emperor of Germany, had passed a resolution, that no further innovations in religious matters should, for the present at least, be allowed. Against this, the Evangelical Estates entered their solemn *Protest*, declaring their readiness to obey all orders of the Emperor, *except such as they deemed repugnant to "God and his Holy Word."*

3. *Worms.*—Many diets were also held at Worms. That of 1521 is the most celebrated, from the fact that Luther appeared there, in presence of the Emperor Charles V, the princes and nobles of the empire, the dignitaries of the Church, and an immense concourse of spectators. Instead of recanting his doctrines, which seemed the only way to save himself from being burned alive, he boldly reiterated them; and proclaimed, still more solemnly, his conviction of their truth, adding: "Here I stand! I cannot otherwise! God help me! Amen!"

4. *Augsburg* — is also famous for many events, particularly the diet of 1530, at which the well known Confession

of Faith, called the *Confession of Augsburg*, drawn up by Melancthon, and subscribed by the Protestant princes, was publicly presented to the Emperor Charles V.

Name rivers of German States (Austria being excluded). What German towns on Rhine? Main? Aar? Moselle? Weser? Elbe? Oder? Vistula?

(505.) **Towns of Austria** (Pl. VI. B). — *Bohemia*: Eger—Carlsbad—Prague—Teplitz—Reichenberg—Gitschin—Trautenau—Nachod—Koeniggratz (battle-ground 1866)—Budweis—Pilsen. *Austrian Silesia*: Troppau. *Moravia*: Olmutz—Brunn—Austerlitz. *Upper Austria*: Linz—Ischl. *Lower Austria*: Vienna—Neustadt. *Styria*: Graetz. *Salzburg*: Salzburg—Gastein. *Tyrol with Vorarlberg*: Innsbruck—Botzen—Trent. *Carinthia*: Klagenfurt. *Carniola with Istria*: Laibach—Goritzia, and the territory and township of Trieste. *Hungary*: Presburg—Comorn—Schemnitz—Kremnitz—Neusohl—Kaschau—Tokay—Miskolcz—Debreczin—Grosswardein Szegedin (seg'ed-in)—Temeswar—Neusatz—Theresiopol—Funfkirchen—Stuhlweissenburg—Pesth—Buda—Raab—Oedenburg. *Galicia with Cracow*: Cracow—Wieliczka—Lemberg—Brody. *Bukowina*: Czernowitz. *Transylvania*: Klausenburg—Maros—Vasarhely—Kronstadt—Karlsburg—Hermanstadt. *Slavonia*: Peterwardein—Semlin. *Croatia*: Agram—Carlstadt—Fiume. *Dalmatia*: Zara—Spalato—Ragusa—Cattaro.

Remark. Cracow—ancient capital of Poland—(after Congress of Vienna, a small independent republic,) was annexed to Austria in 1846.—*Wieliczka* (Vee-litch'-kah)—celebrated for magnificent mines of rock-salt—contains a subterranean town, with streets, churches, statues, etc., all out of the solid salt-rock. Within the mines are a small lake, a rivulet of fresh water, and a chapel hewn out of rock-salt.

(506.) **Military Frontier** — is not strictly speaking, a *province*. The strip of country so called, extending along nearly the whole Turkish frontier, from the Adriatic eastward to Moldavia, and consisting of portions of Croatia, Slavonia, the Banat and Transylvania, was, in 1807, erected into a kind of military organization, as a protection against the Turks. It is no longer of any importance, although the name is still used.

(507.) **Towns of Roumania.** — *Moldavia*: Botoschani—Jassy (yas-see)—Galatz—Kilia. *Valakhia*: Braila (or Ibrail)—Bucharest (or Boo'kar-esht)—Giurgevo—Krajova.

Remark. *Kilia*, a fortified town on one of the mouths of the Danube, was ceded to Turkey by the Treaty of Paris, 1855.

(508.) **Towns of Turkey in Europe.** — *Bosnia with Turkish Croatia, and Herzegovina*: Banyaluke—Travnik—Serajevo (or Bosna Serai)—Mostar (Herzegovina.) *Servia*: Belgrade—Kragnyewatz. *Bulgaria with Dobrodja or Dobrudja*: Vidin—Sistov or Sistova—Rustchuk—Silistria—Sulina—Kostendje—Varna—Schumla—Sofia. *Rumelia*: Nish—Uskub—Philippopli (or Philippopolis)—Slivno—Burgas—Adrianople—Constantinople (or Stambul)—Rodosto—Gallipoli—Seres—Salonica—Bitolia. *Albania with Thessalia*: Scutari*—Durazzo—Avlona—Yanina—Larissa. *Montenegro*: Cettinie. *Candia*: Kanea—Rithymno—Candia, or Megalo Kastro—Gerapetre.

(509.) **Towns of Greece.** — *Rumelia*: Zeitoun or Lamia—Mesolonghi—Lepanto—Thebes—

* Not to be confounded with Scutari in Asia Minor, opposite Constantinople.

Athens—Piræus (port of Athens). *Morea*: Patras—Corinth—Argos—Nauplia—Tripolitza—Sparta—Navarino. *Ionian Is.*: Corfu (on I. of Corfu). *Cyclades*: Syra (on I. of Syra). *Grecian Sporades*: Chalcis (Egripo or Negropont on I. of Euboea)—Hydra (on I. of Hydra)—Egina (on I. of Egina).

(510.) *Syra or Hermopolis* — capital of the government Cyclades—residence of consuls from most European States—principal station of Mediterranean steamers going to and from Constantinople—harbor accessible to large ships. *Corinth*. — Paul addressed two Epistles to its inhabitants.

(511.) **Towns of Italy.** — *Piedmont*: Aosta—Novara—Turin—Alessandria—Cuneo—Savona—Genoa—Spezzia. *Lombardy*: Sondrio—Bergamo—Como—Milan—Pavia—Cremona—Solferino—Brescia. *Venetia*: Belluno—Udine—Treviso—Venice—Chiozza—Padua—Legnago (len-ya'go)—Mantua—Peschiera (pes-ke-a'-ra)—Verona—Vicenza. *Emilia*: Piacenza—Parma—Ferrara—Modena—Bologna—Ravenna—Forlì—Rimini—Carrara. *Tuscany*: Leghorn—Pisa—Lucca—Florence—Siena. *Marca*: Sinigaglia (se-ne-gal'ya)—Ancona—Macerata—Fermo. *Umbria*: Perugia—Rieti. *Naples*: Gaeta—Capua—Naples—Portici—Pozzuoli—Castel-a-mare—Sorrento—Amalfi—Salerno—Cosenza—Reggio—Catanzaro—Taranto—Gallipoli—Otranto—Brindisi—Bari—Foggia—Chieti—Campobasso—Benevento—Potenza. *I. of Sicily*: Palermo—Messina—Catania—Syracuse—Girgenti—Marsala—Trapani—Nicosia—Caltanissetta. *Papal States*: Viterbo—Civita Vecchia—Rome—Velletri. *I. of Sardinia*: Cagliari—Sassari.

Remark. Mantua, Verona, Peschiera, Legnago, form together the supposed impregnable fortresses, called the

Quadrilateral. They were ceded, by Austria to France, and by France to Italy, 1866—Austria retiring from Germany and Italy at the same moment (468).

(512.) **Towns of Switzerland** (Pl. V. B). — Name cantons of Switzerland. *Bern*: Bern—Thun. *Soleure*: Soleure. *Basel*: Basel. *Aargau*: Aargau. *Zurich*: Zurich. *Schaffhausen*: Schaffhausen. *Thurgau*: Frauenfeld. *St. Gall*: St. Gall—Ragatz. *Appenzell*: Appenzell. *Grisons*: Chur (koor). *Ticino*: Lugano—Locarno—Bellinzona. *Valais*: Sion—Martigny—Leuk. *Geneva*: Geneva. *Vaud*: Lausanne—Vevey. *Neuchâtel*: Neuchâtel—Chaux-de-Fonds. *Fribourg*: Fribourg. *Lucerne*: Lucerne. *Zug*: Zug. *Schwytz*: Schwytz. *Glarus*: Glarus. *Uri*: Altorf (famous in history of W. Tell). *Unterwalden*: Stanz.

(513.) **Lakes.** — Nature appears to have gathered the lakes of Europe into two groups—one, distinguished by larger size, in the neighborhood of the Baltic; the other, generally more elevated above the sea, and marked by exquisite beauty of scenery, scattered among the Alps. In the Hungarian plain are several; and a large number, very shallow, are found in the low marshes of Holland. The entire area of the continental European lakes has been estimated at about 38,000 English square miles. Those situated around the Baltic, i. e. Ladoga, Onega, Wener, etc., (Pl. II) comprehend more than five-sixths. They are all fresh-water, except the Neusiedler See and L. Balaton, both in Hungary.

(513 A.) *Remark.* Plate II. figs. 1. 2. give a selection of the principal rivers of the world with their length; and the lakes through which they flow—the Rhine, through L. Constance, the Rhone through L. Geneva. The two lakes, through which the Nile flows, are the *Victoria-Nyanza* and the *Albert-Nyanza* (455). The student will do well to read over all those rivers in figs. 1. 2. with their respective lakes.

(514.) **Lakes of Austria.** — L. Zirknitz (Carinthia), 18 sq. m. — Neusiedler See, 150 sq. m., and Platten See (or L. Balaton) 250 sq. m. (the two latter in Hungary).

(515.) **L. Zirknitz** contains numerous tunnels—like holes, 50 feet deep, called *sieves*, through which the water alternately quite vanishes, then suddenly re-appears, so that a person can, each year, plant buckwheat, cut hay, fish and shoot water-fowl, in and on same spot. The water sometimes fills the whole basin in twenty-four hours. The streams, which feed this lake, are also most curious; flowing, in part, on the surface of the earth, then suddenly vanishing, to re-appear again later.

(516.) **Lakes of Germany.** — Koenigsee (Bavaria).

(517.) **Lakes of Switzerland.** — L. Constance or Boden See, 228 sq. m. — L. Geneva, 240 sq. m. — L. Neufchatel, 115 sq. m. — L. Sempach, 4 sq. m. — L. Zurich, 76 sq. m. — L. Wallenstadt, 22 sq. m. — L. Zug, 135 sq. m. — L. Lucerne or Vierwaldstaedter See 99 sq. m. — L. Brienz, 12 sq. m. — L. Thun, 20 sq. m.

Remark. Switzerland has more celebrated lakes, in proportion to its size, than any other country. They are surrounded by lofty mountains, and give, to scenery, already remarkable for magnificence, an additional and ravishing beauty. *Vierwaldstaedter See* — i. e. Four-forest-cantons-lake.

(518.) **Lakes of Italy** (Pl. V. B). — L. Maggiore, 152 sq. m. — L. Como, 66 sq. m. — L. Iseo — L. Garda, 183 sq. m. — (Pl. VI. B) L. Perugia, or Trasimene.

(519.) **Lakes of England.** — L. Windermere — L. Derwent Water — L. Keswick — L. Bala (Wales).

(520.) **Lakes of Scotland.** — Loch Lomond (lok) — largest lake in Scotland — twenty-four miles in length, and seven miles in its greatest breadth. It contains more than 30 islands. — Loch Awe — second in magnitude — Loch Ness — Loch Oich — Loch Lochie — Loch Leven — Loch Katrine.

Remark. Scotland is remarkable for the number, great beauty and wild grandeur of its lakes; some of them, in connexion with the deeply indented friths and estuaries which make its coast so striking, have been admirably used for purposes of internal navigation. *The Caledonian Canal*, one of the greatest works of modern engineering, connects the North Sea with the Atlantic. It is more than 60 miles long, of which 37 miles lie through Loch Ness, Loch Oich, Loch Lochie.

(521.) **Lakes of Ireland.** — Lough Neagh (loh-nay) — largest lake in the British Isles — twenty miles long (from north to south), and ten in breadth — Lough Erne — area fifty-seven sq. m. Lough Allen — Lough Conn — Lough Mask — Lough Corrib — Lough Ree — Lough Derg — Lakes of Killarney, highly celebrated for picturesque beauty; upon their western side the highest mountains in Ireland rise steeply from the edge of the water.

Remark. The word *lough* (loh), by which the lakes are distinguished (like the similar word *loch* in Scotland), is applied equally to inland lakes and to estuaries, or salt-water inlets.

(522.) **Wales** (486). — S. W. portion of Gr. Britain — till 1536, an independent Principality — still retaining its name, from which the title, Prince of Wales — 140 miles long — 90 broad — mountainous, Mt. Snowdon, culminating point of the whole island (Pl. VI. B).

PART V.

OUTLINE VIEW OF TOWNS, RIVERS, ETC.

OF

UNITED STATES OF AMERICA.

INTRODUCTION.

(523.) It now remains for us to take a somewhat nearer view of the towns, rivers, etc., of the United States of America. This republic, is bounded N. by British America, from which it is separated by 49th parallel, great lakes, and St. Lawrence; E. by Canada (New Brunswick) and Atlantic; S. by Atlantic, Florida Str., G. of Mexico and Mexico; W. by Mexico and Pacific (from C. Flattery to town of San Diego). It comes in immediate contact with no foreign Power but British America, Mexico, and, since the recent purchase (424), Russia. On the S. E., Cuba and the rest of the West India Isles, bring it into certain relations with 6 European, and 3 American States (211 — 216. Pl. III. fig. 3). Farther, on the N. E., lies the Danish Possession, Greenland, where the christian missionary, by a life of labor, danger and self-sacrifice, is silently carrying out the great work of his divine Master. The Unoccupied Arctic Lands are scarcely inhabited, except by the few Mongol

wanderers, originally from eastern Asia, called Esquimaux. Before particularly considering the U. States, it will be useful to take a brief survey of the other countries of N. America.

(524.) **Russian America**, including (Pl. II.) Kodiak I., Sitka I., the Aleutian or Fox Is., and several other groups — lately, by purchase, N. W. territory of the United States in consideration of 7,200,000 dollars. We have thus acquired a part proprietorship in Behring Str., and in Mt. St. Elias. Our flag now floats within the arctic circle, about 71st parallel — a point, where the sun, in summer, remains more than two months above, and, in winter, the same period below, the horizon. Remark (Pl. II.) when it is *6 o'clock in the afternoon*, on the Yenisei R. (Russia in Asia), it is *6 o'clock in the morning*, at the mouth of the Mississippi; and about *midnight*, at the mouth of the Kwichpack. "Now", Senator Sumner remarks, "as the settlements of this coast came *eastward*, from Russia, bringing, with the Russian flag, *western* time, the day is earlier, by twenty-four hours, with them than with us; so that their Sunday is our Saturday; and the other days of the week are in corresponding discord. This must be rectified according to the national meridian". Population, about 54,000 (Esquimaux, Kenaïans, Aleutians and other Indians — in 1866, about 900 Russians), generally fishermen and fur-hunters. This territory had never been actually taken possession of by the Russian government. The supreme authority was vested in a Russian Company, whose sole object was to collect furs. We are separated from the territory by British Columbia.

(525.) **British America** — between Unoccupied Arctic Lands, Great Lakes and St. Lawrence — a colony of Gr. Britain, intersected by arctic circle — with a shattered and broken coast washed by dreary and desolate oceans — population (British and French),

3,494,240, exclusive of about 155,000-Indians. Its chief political divisions are: Hudson Bay Company's Territory (including *Labrador*, *Rupert's Land*, *Columbia*, with *Vancouver I.*)—East or Lower Canada—West or Upper Canada, with Anticosti I.—New Brunswick—Nova Scotia, with Cape Breton I.—Newfoundland—Prince Edward I. The vast western region supplies the world (even including Russia) with furs. The fur-bearing animals are decreasing.

Canada has a united population of about 2,500,000—a considerable portion french, still preserving french customs and the Roman Catholic religion.

Rupert's Land—central and chief division of the Hudson Bay Company's Territory—capital and principal trading station, *Fort York*—magnificent forests, vast prairies and a soil yielding European cereals.

Red River Settlement—immediately N. of our northern frontier—thriving colony, with a good climate and fruitful soil—wheat, rye, oats, barley in great abundance—drained by the Assiniboin and Saskatchewan rivers—capable of supporting a dense population.

Columbia (with Vancouver I.)—sometimes called New Caledonia—capital, *Victoria*. Gold has been discovered near the Frazer River—single pieces worth 10 or 15 dollars. A digger has gained, sometimes, 50 dollars a day—one gained 213. Gold is found thickly scattered, not only over this region and California, but also over Washington Ter., Oregon, Idaho, Montana, Colorado and Arizona—generally side by side with silver and other mineral treasures.

Vancouver I.—on 50th parallel—formerly Quadra—in some parts, extremely fertile—splendid timber—rich in coal, fish, furs—excellent harbors—a position favorable for trade with Oregon, Russia, China, Australia—ceded to Gr. Britain (1846).

Remark.—A Royal Proclamation, by the British government, took effect July 1, 1867, uniting into one

Confederation, under the name of CANADA, the three provinces, Canada, New Brunswick, and Nova Scotia.

(526.) **Mexico** — extensive coast on Pacific and G. of Mexico—intersected by tropic of Cancer—an immense plateau of plutonic origin, from 6 to 9000 feet high, ramifying into separate mountain-chains—population, nearly 8,000,000—the only limitrophe*) country of the United States on the S.—provinces adjoining United States: Tamaulipas, New Leon, Coahuila, Chihuahua, Sonora and Lower California—established religion and only one recognized by the government, the Roman Catholic—education, very backward. Mexico was a Spanish possession till 1810. General Iturbide suffered death by military execution (1824) for having a second time proclaimed himself emperor. Spain recognized the independence of Mexico in 1836. Since then Mexico has been in a chaotic state. In 1862, the Emperor Napoleon III. conceived the idea of placing an Austrian Prince, Maximilian, as emperor, upon the Mexican throne. The attempt to execute his plan by french bayonets, accompanied by enormous bloodshed and suffering, resulted in signal failure, and Maximilian was shot by the Mexican authorities. Slavery has been prohibited, but the haciendas—that is, the laborers on the great plantations—being deeply indebted to their employers, are said to suffer from a condition of thralldom, more insupportable than that of a negro slave.

(527.) **Cuba**, this luxuriant and lovely island, just within the Tropics, has a peculiar interest, from its close proximity to the United States; and from the general opinion that, notwithstanding the prohibition of the slave-trade, that cruel traffic has continued to be carried on.

*) Limitrophe — on the limits of.

STATES AND TERRITORIES.

(528.) The number of regularly organized states is 38. The number of territories, 10, besides a portion of land, 10 square miles, called *District of Columbia*, ceded, by Maryland and Virginia, as the seat of the national government, and under its immediate jurisdiction. The rapidly increasing population will probably soon transform the territories into organized states. In the following lessons, for the convenience of learning, we, at first, take states and territories together, without distinction. The list of territories will subsequently be learned apart. The states and territories are naturally divided into 12 groups. Where a state belongs, at the same time, to two groups, it will be repeated; as, for example, in the case of Florida, Texas, California, etc. The pupil is begged always to follow this rule in the series of repetitions.

(529.) **New England States.** — Maine—New Hampshire—Vermont (*R. these 3*). Massachusetts—Rhode Island—Connecticut (*R. these 3.*—*How many? R. 6 from Maine*).

Remark. The name, *New England States*, has no political signification. The region, when a French possession *New France*, was afterwards called *New England*. All these states touch the Atlantic, except Vermont.

(530.) **Other States touching Atlantic.** — New York—New Jersey—Pennsylvania (*R. these 3*). Delaware—Maryland—E. Virginia (*R. these 3.*—*R. from New York*). N. Carolina—S. Carolina—Georgia (*R. these 3.*—*R. from New York*). Florida (*R.*—*How many from New York? R. these 10.*—*R. from Maine*).

(531.) **Touching G. of Mexico.** — Florida—Alabama—Mississippi (*R. these 3*). Louisiana—Texas (*R. these 2*.—*How many from Florida? R. these 5*.—*R. from Maine*).

(532.) **Touching Mexico.** — Texas—New Mexico—Arizona (*R. these 3*). California (*How many from Texas? R. these 4*.—*R. from Florida—R. from Maine*).

(533.) **Touching Pacific.** — California—Oregon—Washington (*R. these 3*.—*R. from Florida—R. from Maine*).

(534.) **Touching British America, W. of Lakes.** — Washington—Idaho—Montana (*R. these 3*). Dakota—Minnesota (*How many from Washington? R. these 5*.—*R. from Florida—from Maine*).

(535.) **Touching Great Lakes.** — Minnesota—Wisconsin—Michigan (*R. these 3*). Illinois—Indiana—Ohio (*R. these 3*.—*R. from Minnesota*). Pennsylvania—New York (*R. these 2*.—*How many from Minnesota? R. these 8*.—*R. from Florida—R. from Maine*).

(536.) **Lake States which directly touch British America.** — Minnesota—Michigan—New York (*R. these 3*.—*R. states from Washington—from Florida—from Maine*).

(537.) **Touching British America, E. of Lakes.** — New York—Vermont—New Hampshire (*R. these 3*). Maine (*How many from New York? R. these 4*.—*R. from Washington—from Maine*).

Remark. We have now named, how many (states and territories)? Thirty-four. How many remain yet unnamed, including District of Columbia? Fifteen.

(538.) **Interior States, W. of Mississippi.** — Nevada—Utah—Wyoming* (*R. these 3*). Colorado—Nebraska—Kansas (*R. these 3.—R. from Nevada*). Iowa—Missouri—Arkansas (*R. these 3.—R. from Nevada*). Indian Territory.** (*How many? R. these 10.—R. from Washington—from Maine*).

(539.) **E. of Mississippi.** — Tennessee — Kentucky — W. Virginia (*R. these 3*). Lastly, District of Columbia. (*How many? R. these 4.—How many states altogether? R. these 48, bearing, however, in mind that they include territories and one District*).

(540.) **On Arctic Ocean.** — The territory, till now called Russian America. (*R. the whole 49*).

(541.) **Ten Territories, July 1867.** — Of these 49 divisions, 10 are as yet territories. By territory is meant those portions which, from want of sufficient population and other causes, are not yet organized as states. Washington—Idaho—Montana—Dakota (*R. these 4*). Utah—Wyoming—(*R. these 2.—R. from Washington Ter.*).—Arizona—New Mexico—Indian Territory (*R. these 3.—R. from Washington Ter.*). Russian America.

WATER DIVISIONS—LAKES—ISLANDS— CAPES.

(542.) **Water Divisions.** — *On the Atlantic, from B. of Fundy to Florida B.*—Passamaquoddy B.—Machias B.—Frenchman's B.—Penobscot B.—

* A section of Dakota is called Wyoming, by some maps, although it has not yet been organized as a territory. ** The Indian Ter. is not, strictly speaking, a territory. It is a region set apart, by the government of the United States, as a home for certain Indian tribes.

Casco B.—Massachusetts B.—Cap Cod B.—
 Buzzard's B.—Narraganset B.—Long Island
 Sound—New York B.—Little and Great Egg
 Harbor—Delaware B.—Chesapeake B.—
 Albemarle and Pamlico Sounds—Raleigh B.
 (raw'-lee)—Onslow B.—Long B.—Winyaw B.—
 Bull's B.—Charleston Harbor—Port Royal
 Entrance—Str. of Florida—Florida B.

G. of Mexico, from Florida B. to mouth of Rio Grande. — Chatham B.—Oyster B.—Charlotte Harbor—Tampa B.—Appalachee B.—Appalachicola B.—St. Joseph's B.—Pensacola B.—Mobile B.—Mississippi Sound—Chandeleur B.—Atchafalaya B.—Vermillion B.—Galveston B.—Matagorda B.—

Pacific, from town San Diego to G. of Georgia. — Monterey B.—San Francisco B.—Str. of Juan de Fuca—Puget Sound—G. of Georgia. —

On Lakes. — Keweenaw B. (L. Superior)—Green B.—Gr. Traverse B. (L. Michigan)—Mackinaw Str. and Saginaw B. (L. Huron)—Str. St. Mary—Sandusky B. (L. Erie). —

Remark to the teacher. — In these sections, the principle of repetition can easily be applied. The pupil may be required, also, to repeat each state, with the water-divisions, islands, etc., belonging to it—as, for example, *Maine*: Passamaquoddy B., etc. Where a name is not found on the large map, seek it on the corner-figures, 1 and 2.

(543.) **Lakes.** — *Maine*: Eagle Lakes—Grand L.—Schoodic Lakes (skoo'dic)—Millinocket—Moosehead—Moosetocmaguntic—Umbagog—Sebago. — *New Hampshire*: Umbagog—Ossipee—Winnipiseogee—Sunapee. — *Vermont*: L. Champlain—L. Memphramagog. — *New York*: L. George—L. Champlain—Saranac—Black—Oneida—Skaneateles—Owasco—Cayuga—Seneca—Canandaigua—Crooked—Chautauque—*Ontario*—Erie. — *Florida*: L. George—Kissime

— Okechobee. — *Louisiana*: Pontchartrain — Maurepas — Borgne — Calcasieu. — *California*: L. Clear — Tulare — Soda. — *Minnesota*: Red L. — Itasca L. — Leech. — *Michigan*: L. St. Clair. — *Wisconsin*: L. Winnebago. — *Nevada*: Pyramid L. — Walker L. — *Oregon*: Klamath L. — Summer L. — Sylvanille L. — Malheur L. — Abert L. — *Idaho*: Pend Oreille. — *Montana*: Flathead. — *Utah*: Great Salt Lake — Utah L. — Sevier L. — Salt L. —

(544.) **Islands.** — *In Atlantic*: Mt. Desert I. — Nantucket and Martha's Vineyard — Block I. — Long Island and Staten Island — Roanoke I. — St. Helena Is. — Hilton Head I. —

In G. of Mexico: Florida Keys — Pine Is. — Dry Tortugas Is. — Cedar Keys — Santa Rosa I. — Chandeleur Is. —

In Pacific: San Clement I. — Santa Catalina — San Nicolas — Santa Cruz — Santa Rosa I. — San Miguel. —

In Great Lakes: Group of Apostles — Isle Royale (L. Superior). —

(545.) **Capes.** — *In Atlantic*: C. Ann — C. Cod — Sandy Hook — C. May — C. Henlopen — C. Charles — C. Henry — C. Hatteras — C. Lookout — C. Fear — C. Canaveral.

In G. of Mexico: C. Sable — C. Romano — C. St. Blas.

In Pacific: Pt. Conception — C. Mendocino — C. Blanco — C. Foulweather — C. Lookout — C. Flattery.

RIVERS AND THEIR TOWNS.

(546.) **River basins.** — The rivers of W. Continent, in magnitude and extent of drainage, excel those of E. Continent. Remark three great river basins

inclined, first, to G. of Mexico—second, to Atlantic—third, to Pacific.

Let us now consider the rivers flowing into G. of Mexico.

(547.) **Mississippi R.** — marks boundary line between following states, *right bank*: Minnesota—Iowa—Missouri—Arkansas—Louisiana; *left bank*: Wisconsin—Illinois—Kentucky—Tennessee—Mississippi—Louisiana.

(548.) **Branches of Mississippi.** — Among 50 mighty affluents we select the following, *right bank*: Minnesota—Upper Iowa R.—Red Cedar R.—Iowa R.—Des Moines—Missouri—White R.—Arkansas, largest tributary of Mississippi, after Missouri—Red River, formed by the confluence of Washita and Bartholomew rivers. *Left bank*: St. Croix—Chippeway R.—Black R.—Wisconsin R.—Rock R.—Illinois R. with Fox R., Kankakee and Sangamon—Kaskaskia—Ohio—Obion R.—Hatchee R.—Yazoo with Sunflower—Big Black R.

(549.) **Towns on or near Mississippi.** — Ft. Snelling—St. Paul—Stillwater—Prescott—Wabashaw—Prairie du Chien—Dubuque—Galena—Davenport—Muscatine—Burlington—Fort Madison—Keokuk—Quincy—Hannibal City—Alton—St. Charles—St. Louis—St. Genevieve—Kaskaskia—Cairo—Memphis—Helena—Arkansas—Napoleon—Columbia—Vicksburg—Natchez—Bayou Sara—Baton Rouge—Donaldsonville—New Orleans.

Remark. — 1. The pupil, in repeating, will name the state or territory to which the town belongs.

2. The teacher will, here, also, at his discretion, apply the principle of repetition, as in sections 285. 287 and elsewhere.

(550.) **Towns on branches of Mississippi.** — Iowa City — Des Moines — Batesville — Little Rock — Arkansas — Harrisonburg — Shreveport — Natchitoches (natch-i-totch'iz, often pron. nak-etush') — Alexandria — Opelousas — Portage — Wattertown — Janesville — Peoria — Springfield — Vandalia — Kaskaskia. —

(551.) **Missouri R.** — flows from Rocky Mts. through Idaho Ter., Dakota — then between Nebraska and Iowa, by Kansas, through Missouri State, where it empties into the Mississippi.

(552.) **Branches of Missouri R.** — *Right bank:* Yellow Stone with Big Horn and Powder R. — Little Missouri — North Fork — Shyenne — White R. — Niobrara R. — South Fork of Platte or Nebraska with Panee Loup or Wolf R. — Republican Fork — Smoky Hill Fork or Kansas — Osage R. — Gasconade R. — *Left bank:* Milk R. — James R. — Big Sioux — Little Sioux — Grand R. — Chariton R. —

(553.) **Towns on Missouri and branches.** — Virginia City — Ft. Benton — Ft. Union — Ft. William — Ft. Clarke — Ft. Connor — Ft. Pierre — Yankton — Omaha City — Kearney — Nebraska City — St. Joseph — Atchison — Leavenworth — Platte City — Ft. Riley — Topeka — Lecompton — Wyandot — Independence — Jefferson City — St. Charles — Alton.

(554.) **Ohio R.** — one of the most important — formed by the confluence, at Pittsburg, of the Alleghany and Monongahela with its branch, the Youghiogheny (yoh-ho-gay'-ny), flows through the following states, *right bank:* Pennsylvania — Ohio — Indiana — Illinois; *left bank:* Pennsylvania — W. Virginia — Kentucky.

(555.) **Branches of Ohio.** — *right bank:* Beaver Cr. — Muskingum — Scioto — Miami — Wabash with Little Wabash — *left bank:* Little Kanawha — Gr. Kanawha — Big Sandy R. — Licking — Kentucky — Rolling Fork — Green R. — Cumberland — Tennessee.

(556.) **Towns on Ohio and branches.** — *Main stream:* Pittsburg — Alleghany City — Steubenville — Wheeling — Marietta — Parkersburg — Guyandotte — Portsmouth — Maysville — Cincinnati — Newport — Covington — Madison — Louisville — New Albany — Hawesville — Evansville — Cairo — *Branches:* Nashville — Clarksville — Ft. Donelson — Chattanooga — Decatur — Florence.

(557.) **Other Rivers, flowing into G. of Mexico.** — *Those East of Mississippi:* Caloosahatchee — Pease Cr. — Suwanee R. — Appalachicola, formed by the junction of the Chattahoochee and Flint — Choctawhatchee with Pea R. — Yellow Water — Escambia — Perdido R. — Alabama, formed by Tallapoosa and Coosa — Mobile R. with Tombigby, Black Warrior and the E. outlet Tensaw — Pascagoula with Chickasawha and Leaf — Pearl R. — *Those West of Mississippi:* Calcasieu — Sabine R. — Neches R. — Trinity R. — Rio Brazos — Rio Colorado — Guadalupe — San Antonio — Nueces — Rio Grande del Norte.

(558.) **Towns on Rivers, E. and W. of Mississippi.** (*Pupil will name each river.*) — *East:* Atlanta — La Grange — Columbus — Montgomery — Mobile — Selma — Aberdeen — Columbus — Gainesville — Jackson. *West:* Austin — San Antonio — Corpus Christi — Brownsville — Ft. Fillmore — Mesilla — Belen — Albuquerque — Santa Fé — Taos.

(559.) **Rivers flowing into Atlantic.** — St. Lawrence forms, in part of its course, boundary line between Canada and New York. *Towns on British side:* Toronto—Ottawa—Montreal—Quebec; *on American side:* Superior City—Sault St. Mary (sō St. Mary)—Sheboygan—Milwaukee—Racine—Kenosha—Chicago—Grand Haven—Port Huron—Detroit—Monroe—Toledo—Sandusky City—Cleveland—Erie—Buffalo—Oswego—Ogdensburg.

(560.) **Penobscot R.** — Maine — 275 miles — lovely scenery—large vessels ascend as far as Bangor—remarkable for a superior slate-quarry (on the branch, Piscataquis)—traverses nearly the whole state and is studded with a number of small islands. *Towns:* Bangor, Rockland.

(561.) **Kennebeck** Maine — rises in Moosehead L. *Towns:* Moscow—Solon—Norridgewock—Waterville.

(562.) **Connecticut R.** — longest and one of the most beautiful of New England—400 m.—rising near Canada, separates New Hampshire from Vermont, and, after having traversed Massachusetts and Connecticut, empties into Long Island Sound, at New London, one of the best harbors of the state. *Towns:* Guildhall—Lancaster—Newbury—Haverhill—Norwich—Hanover—Windsor—Charlestown—Brattleboro—Greenfield—Deerfield—Springfield—Hartford—Middletown.

(563.) **Hudson** — 300 m. — flows out of the Adirondac Mts. into New York Bay, through enchanting scenery, rivaling that of the Rhine. *Principal Towns:* Troy—Albany—Hudson—Poughkeepsie—West Point—New York—Hoboken.

(564.) **Delaware R.** — 300 m.—rises in New York among the Katskill Mts.—flows through following states, *right bank*: Pennsylvania, Delaware; *left bank*: New York, New Jersey. Ships of largest size come up to Philadelphia—steamboats to Trenton. *Towns*: Easton—Trenton—Philadelphia—Camden—New Castle—Wilmington.

(565.) **Susquehanna** — largest stream in Pennsylvania—length, 500 miles—traverses New York, Pennsylvania, Maryland and falls into Chesapeake B.—numerous beautiful islands—navigation, obstructed by rocky rapids, carried on by two parallel canals.—*Town*: Havre de Grace.

(566.) **Potomac** — Length, 350 miles—largest branch, Shenandoah—boundary between Maryland and Virginia—beautiful scenery—navigable for largest ships to Washington City. *Principal towns*: Cumberland—Georgetown—Washington—Alexandria—8 miles below the latter, Mount Vernon, the former residence of Gen. Washington.

(567.) **Four Rivers flowing into Pacific.** — **Colorado** (called also Colorado of the West)—length, with its branch, Green River, 1200 m.—forming part of boundary between California and Arizona—remarkable for the great defile, by which it has forced its way through the Rocky Mts.—precipitous banks, 1000 to 1500 feet high—tribes of Indians live along its shores—traces of ancient irrigating canals, showing that this region was formerly cultivated—a great tidal wave at its mouth renders the entrance dangerous except for vessels of light draught. *Town*: Fort Yuma.

Remark. There are two other American rivers of this name, one, the Rio Colorado, emptying into Matagorda B. (G. of Mexico), the other (Pl. II.), traversing the Argentine Confederation from Andes to Atlantic.

(568.) **Sacramento** — large and important river — 500 m. long — draining, with its branch, the San Joaquin, the great central valley of California — navigable at all seasons to Sacramento, and for small vessels 150 m. farther. *Towns:* Shasta — Sacramento — Stockton.

(569.) **Columbia or Oregon R.** — 1200 m. long — enters the Pacific — part of its course, boundary between Oregon and Washington. It is the largest of the Pacific rivers — navigable 145 m. up. *Towns:* Ft. Walla-Walla — Ft. Vancouver.

(570.) **Kwichpack or Yucon** (Plates II. IV.) — great river of the yet unnamed N. W. territory of the United States — length, with its windings, 1500 m. — rises in the Rocky Mts. and enters into Behring Sea (Pacific). The Kwichpack and Yucon are considered, by some geographers, to be one river, as on our maps.

(571.) **The Mississippi** — (“Great Water” — “King of American streams”) — with its tributaries, one of the largest river systems of the globe, draining one-seventh part of north american continent. It rises in the highlands of Minnesota State, at a place called Hauteur de Terre, W. of L. Superior — length, from L. Itasca, the source of Mississippi proper, 3,200 m.; but, from the source of the Missouri, the main branch, 4,350 m. Flowing, at first, through majestic primeval forests, the solemn uncleared land of the red Indian, from a point, where the earth is covered, a great part of the year, with snow and ice — then, along tracts marked by moss, the fir-tree, and other northern vegetation — it rolls on, between ever changing shores — by populous and rapidly growing cities — receiving, from the Rocky Mts. and Alleghanies, as it advances, about 50 mighty affluents which, in Europe, would be called important rivers — bearing upon its bosom, night and day, hundreds of immense steamers, crowded with human

beings, it sweeps through vast, monotonous savannahs covered with long grass—plantations of sugar-cane, cotton and fruits of the south—into G. of Mexico, at a point where snow and ice are unknown phenomena, and where the odors of the orange, lemon and magnolia are wafted by the breezes of a perpetual summer. There are several falls, among others, those of St. Anthony. It is studded with numerous islands. Its banks sometimes rise into broken and precipitous bluffs, 150 to 750 feet high, intersected by deep ravines—gentle valleys opening on either side and waving with forests of pine, birch, maple and cedar—wide prairies and woodlands—sometimes inundating its shores for a hundred miles—masses of timber annually drifting down its stream, occasionally forming floating islands covered with vegetation and fixing, into the bottom, the dreaded snag*. As we approach its mouth, it becomes a rapid, desolating torrent, loaded with mud—breaking over its banks in immense freshets, forming there large lakes, inhabited by alligators and wild birds—sweeping away whole forests and producing the greatest disasters which are said to be increasing in frequency and extent. About four thousand million cubic feet of solid matter are annually brought down to the gulf. The formation of the delta, by these deposits, is supposed to have occupied a period of 67,000 years. "The facility", says Mc Culloch, "afforded by the Mississippi, and its various tributaries, for internal navigation, are wholly unequalled, except, perhaps, by the Amazon and its tributaries, in S. America. In so far, indeed, as navigation is concerned, the Mississippi should be regarded, from its great depth and comparative freedom from shoals and cataracts, not so much a river as a vast, internal sea, a Medi-

*) Snag:—in the western rivers of the United States, the trunk of a large tree firmly fixed to the bottom at one end, and rising nearly or quite to the surface at the other end, by which steamboats, etc., are often pierced and sunk (Webster's Dict.)

terranean, in fact—extending through all the central and most fertile portion of N. America; and enabling its remotest recesses, though 2,000 or 3,000 miles inland, to maintain a direct communication, by water, with the distant quarters of the globe. It is but yesterday, as it were, since the valley of the Mississippi began to be occupied by civilized man, and reclaimed from the wilderness; and its astonishing increase in population and wealth is principally ascribable to the facility, afforded by this noble river, for its intercourse with the other parts of America, and of the world. The trade and navigation of the Mississippi is already, indeed, incomparably greater than that of the Ganges, the Danube, the Elbe, or any other river of the ancient continent. Let, then, the reader, who compares the commerce and importance of the Mississippi, at this moment, with its state only half a century ago, imagine, if he can, what it must be, when all the vast country between the Rocky Mts. and Alleghanies has been fully peopled, when New Orleans has become a second London, and large cities have been built on its most distant affluents!

“Vast as are the natural capacities of the Mississippi for navigation, they have been, and, no doubt, will continue to be, greatly extended by canals and artificial means. It is already united with the grand chain of lakes and the basin of the St. Lawrence; and goods, taken on board at New York, may at present be conveyed to New Orleans without being unshipped, and conversely.”

(572.) **Missouri** (i. e., “Mud River”) — longest tributary stream of the globe—rises in the Rocky Mts., about one mile distant from the Salmon R., one of the affluents of the Columbia. About 400 miles from its source, it has broken its way through a sublime and extraordinary ravine, 5 or 6 miles long and 150 yards wide, called the Gates of the Rocky Mts., whose black

granite cliffs rise 1200 feet perpendicularly. A short distance beyond, it pours its floods, during 16 miles, over the Great Falls, second only to Niagara, a descent altogether of 307 feet. These form the first absolute obstacle to navigation, from its mouth, at the Mississippi, (about half a mile wide and 2500 miles from its source). It flows through well-wooded valleys—extensive and beautiful meadows and plains, surrounded by distant and lofty mountains—through a boldly undulating country—by sterile and arid regions—by immense grassy prairies, where the elk, the white bear, the antelope and buffalo are followed by the huntsman, the trapper and the red Indian. It strikes the Mississippi at a point where that river, to which, in length and mass of water, it is greatly superior, has half completed its course. Some european geographers consider the Mississippi as only an affluent of this gigantic stream; but the subordinate rank of the Missouri is determined by the fact that it flows through regions deficient in wood and coal. Its sinuous channel is, moreover, sometimes shallow and interrupted by sandbars, snags and rapids, by timber embedded in its channel and by the impetuosity of its current. Some of these obstacles are obviously removeable. The entrance of the Missouri into the Mississippi is described, by Capt. Hall, as particularly striking. "It seemed as if the dirty Missouri had insinuated itself under the clear Mississippi, for we saw it boiling up at a hundred places. First, a small curdling white spot, no bigger than a man's hand, appeared near the surface, which rapidly swelled and boiled about, till, in a few seconds, it became as large as a steam-boat, spreading itself on all sides in gigantic eddies and whirlpools, in a manner astonishingly grand and striking. At other places, the two currents ran along, side by side, without the least intermixture, like oil and water; but this separation was never of long continuance, and the contaminating Missouri soon conquered the beautiful Mississippi: indeed, the stain is never for one moment got rid of, during

the 1,200 miles that the stream runs over, before it falls into the G. of Mexico."

(573.) **The St. Lawrence.** — The great lakes, the largest mass of fresh water in the world, pour their surplus floods into G. of St. Lawrence by St. Lawrence R., which may be said to rise at the source of the St. Louis, W. of L. Superior. It bears different names in different parts of its course; between L. Superior and L. Huron—the St. Mary; between L. Huron and L. Erie—the St. Clair and Detroit; between Lakes Erie and Ontario—the Niagara; and from Ontario to the sea—the St. Lawrence. Total length, including windings,—2273 m., of which nearly the whole is navigable. The Miamis River, western extremity of L. Erie, rises so near the northern affluents of the Ohio, as to afford means of communication between the lake and the Mississippi. The Niagara River, thirty-four miles in length, presents that great world-curiosity, the Niagara Falls, of which we here say nothing, except to quote the opinion of Prof. Ansted "that the recession of these falls is probably more rapid than is usually supposed, very considerable portions of the rock having fallen, within the memory of man; this is not to be wondered at, when 15 million cubic feet of water have been estimated to pass over it every minute."

(574.) **Rivers according to States.** — *Maine:* (Fig. 2.) St. John with Aroostook, Allagash, Walloostook and St. Francis—St. Croix—Machias—Penobscot with Mattawamkeag and Piscataquis—Kennebec with Dead R.—Androscoggin (an-dros-cog'-ghin) — Saco — Piscataqua. — *New Hampshire:* Androscoggin—Saco—Piscataqua—Merrimac with Contoocook—Connecticut (Con-net'-i-cut). — *Vermont:* Connecticut with White R. — Batten Kill—Otter Creek—Onion R. — La Moille R.—Missisquoi. — *Massachusetts:* Merri-

mac with Nashua—Charles R.—Blackstone—Connecticut with Chicopee, Deerfield and Westfield—Farmington—Housatonic.—*Rhode Island*: Blackstone—Pawtucket.—*Connecticut*: Thames—Connecticut with Farmington—Housatonic.—*New York*: (Fig. 1.) St. Lawrence with Oswegatchie and Racket R.—Saranac—Hudson with Batten Kill—Hoosic—Croton—Mohawk R. with Schoharie—Delaware—Susquehanna—Chenango—Chemung—Alleghany—Cattaraugus—Tonawanda—Genesee—Seneca—Oswego—Black R.—*Pennsylvania*: Delaware—Lehigh—Schuylkill (skool'-kil)—Susquehanna with N. Branch, West Branch and Juniata—Ohio with Beaver, Alleghany, Clarion Creek, Youghiogeny (yoh-ho-gah'-nee) and Monongahela.—*Delaware*: Delaware.—*New Jersey*: Hudson—Raritan—Little Egg Harbor R.—Gr. Egg Harbor R.—Delaware.—*Maryland*: Potomac.—*E. Virginia*: Shenandoa—Potomac—Rappahannock—York R.—James—Appomattox—Staunton.—*W. Virginia*: South Branch of Potomac—Cheat R.—Little Kanawha—Gr. Kanawha with Elk, Gauley and Greenbrier—Ohio with Big Sandy.—*N. Carolina*: Chowan—Roanoke—Tar—Neuse—Cape Fear—Deep R.—Catawba—French Broad—Yadkin—Dan.—*S. Carolina*: Little Pedee—Great Pedee—Lynch's Creek—Black R.—Santee—Congaree—Wateree—Broad R.—Saluda—Edisto—Combahee—Savannah.—*Georgia*: Savannah—Ogeechee—Altamaha (Al-ta-ma-haw') with Oconee and Ocmulgee—Santilla—St. Mary—Suwanee (su-wah'-nee) with Allapahaw—Flint—Chattahoochee—Etowah.—*Florida*: St. John's R.—Kissime—Caloosahatchee—Pease Cr.—Suwanee—Appalachicola—Chocktawhatchee—Yellow Water—Escambia—Perdido.—*Alabama*: Pea R.—Escambia—Tensaw—Alabama with Tallapoosa,

Coosa, Mobile (mo-beel'), Black Warrior, and Tombigby — Tennessee R. — *Mississippi*: Pascagoula with Chickasawha and Leaf R. — Pearl R. — Big Black R. — Yazoo with Sunflower R. — *Mississippi*. — *Louisiana*: Mississippi with Red River and Washita — Atchafalaya — Calcasieu — Sabine. — *Texas*: Red River — Sabine — Neches (Netch'-ez) — Trinity — Rio Brazos (Brah-zos) — Rio Colorado — Guadalupe — San Antonio — Nueces (Nwa'-ces) — Rio Grande del Norte — Pecos. — *California*: Klamath R. — Sacramento — San Joaquin — Colorado — *Minnesota*: Mississippi — St. Croix — Minnesota — Red River of the North — *Michigan*: Menomonee — Manistee — R. au Sable — Saginaw — St. Joseph's — Kalamazoo — Grand River — Muskegon. — *Wisconsin*: Menomonee — Wolf R. — Wisconsin — Mississippi — Black R. — Chippeway — St. Croix. — *Illinois*: Ohio with Little Wabash — White R. — Wabash — Mississippi with Rock R. — Illinois with Fox and Kankakee — Sangamon — Kaskaskia — *Indiana*: Kankakee — Tippecanoe — Wabash (Waw'-bash) — White R. with West Fork and East Fork — Ohio. — *Ohio*: Ohio — Muskingum — Scioto — Miami — Sandusky — Maumee. — *Nevada*: Humboldt R. — Walker R. — *Nebraska*: Niobrara — Missouri — Panee Loup or Wolf R. — Nebraska or Platte R. — Republican Fork. — *Kansas*: Missouri — Republican Fork — Smoky Hill Fork or Kansas — Neosho — Arkansas. — *Iowa*: Mississippi — Upper Iowa — Red Cedar — Iowa — Des Moines — Chariton — Missouri with Little Sioux. — *Missouri*: Mississippi — Grand R. — Chariton R. — Missouri with Gasconade — Osage — Current. — *Arkansas*: Mississippi — White R. with Black R. — Arkansas — Bartholomew — Washita. — *Tennessee*: Tennessee with Clinch, Holston, Hiwassee, Elk and Duck R. — Mississippi with Hatchee and Obion — Cumberland. — *Kentucky*:

Ohio—Big Sandy R. — Licking — Kentucky — Rolling R. — Green R. — Cumberland — Tennessee — Mississippi. — *Washington Territory*: Okonagan — Columbia — Yakima. — *Oregon*: Willamette R. — Columbia R. — John Day's R. — Malheur R. — *Idaho*: Clark's Fork — Salmon R. — Lewis or Snake R. — *Montana*: Missouri with Milk R., Yellow Stone with Powder R. and Big Horn R. — *Dakota*: Missouri with Big Sioux — Shayenne — James — Little Missouri — North Fork — Shyenenne R. — White R. — Niobrora — *Utah*: Colorado with Green R. — Grand R. — San Juan — Sevier — Jordan. — *Wyoming*: Big Horn — Powder — Platte R. with Laramie — North Fork and Sweet Water R. — *Colorado*: South Fork of Platte R. — Republican Fork — Arkansas — Gunnison — Grand R. — *New Mexico*: Rio Pecos — Rio Grande del Norte. — *Arizona*: Colorado with Little Colorado — Rio Gila — Rio San Pedro — Williams Fork. — *Indian Territory*: Red Fork of the Arkansas with Arkansas and Neosho — Canadian R. with North Fork of Canadian R. — Red R. with False Washita and North Fork. — *District of Columbia*: Potomac.

(575.) **Exercises on Rivers.** — Pl. VI. A. — The States, E. of Mississippi, are here reproduced, upon a somewhat larger scale than on Pl. VII., and without names, for a clearer view of the chief rivers. The teacher will read the *arabic number* and, the pupil, in reply, will name the river from the corresponding number on the map; and also the states through, or by which it flows. *River 1.* — St. Croix, boundary line between Maine and New Brunswick. — *River 2.* — Penobscot (Maine). — *River 3.* — Kennebec (Maine). — *River 4.* — Androscoggin (Maine, New Hampshire). — *River 5.* — Merrimac (New Hampshire and Massachusetts). — *River 6.* — Connecticut R. (New Hampshire, Vermont, Massachu-

setts and Connecticut).—*River 7.*—Housatonic (Massachusetts and Connecticut).—*River 8.*—Hudson (New York and New Jersey).—*River 9.*—Mohawk (New York).—*River 10.*—Passaic (New Jersey).—*River 11.*—Raritan (New Jersey).—*River 12.*—Delaware (New York, Pennsylvania, New Jersey, Delaware).—*River 13.*—Schuylkill (Pennsylvania).—*River 14.*—Susquehanna (Pennsylvania, Maryland).—*River 15.*—North branch of Susquehanna (New York, Pennsylvania).—*River 16.*—West branch of Susquehanna (Pennsylvania).—*River 17.*—Juniata (Pennsylvania).—

Remark.—We now take the Ohio with its head waters and branches—first, the three rivers which unite to form the Ohio; then, the right bank branches, then, the left.

River 18.—Alleghany (New York, Pennsylvania).—*River 19.*—Youghiogeny (yoh-ho-gay'-nee) (Maryland, Pennsylvania).—*River 20.*—Monongahela (W. Virginia, Pennsylvania).—*River 21.*—Ohio (Pennsylvania, Ohio, Indiana, Illinois, W. Virginia, Kentucky). *We now come to right bank branches.* *River 22.*—Muskingum (Ohio).—*River 23.*—Scioto (Ohio).—*River 24.*—Miami (Ohio, Indiana).—*River 25.*—White R. and branches (Illinois and Indiana).—*River 26.*—Wabash (Ohio, Indiana, Illinois).—*Now left bank branches*—*River 27.*—Gr. Kanawha (N. Carolina, E. Virginia, W. Virginia).—*River 28.*—Kentucky (Kentucky)—*River 29.*—Cumberland (Kentucky, Tennessee).—*River 30.*—Tennessee (E. Virginia, Tennessee, Alabama, Mississippi, Tennessee again, Kentucky). *Now back to Maryland and the Atlantic basin.* *River 31.*—Potomac (Maryland, E. Virginia).—*River 32.*—James R. (E. Virginia).—*River 33.*—Roanoke (E. Virginia, N. Carolina).—*River 34.*—Cape Fear R. (N. Carolina).—*River 35.*—Gr. Pedee R. (N. Carolina, S. Carolina).—*River 36.*—Santee R. (S. Carolina).—

Remark. — The branches of the Santee, flowing out of N. Carolina, bear the names of Congaree, Saluda, Broad and Wateree.

River 37. — Savannah (between S. Carolina and Georgia). — *River 38.* — Altamaha with branches (Georgia). — *River 39.* — St. John's R. (Florida) — *River 40.* — Appalachicola with branches (Georgia, Alabama, Florida). — *River 41.* — Alabama (Georgia, Alabama). — *River 42.* — Mobile with branches (Alabama, Mississippi). — *River 43.* — Mississippi. *States on right bank:* (Minnesota — Iowa — Missouri — Arkansas — Louisiana). — *States on left bank:* (Minnesota again — Wisconsin — Illinois — Kentucky — Tennessee — Mississippi — Louisiana). *Now right bank branches.* *River 44.* — Minnesota or St. Peters (Dakota, Minnesota). — *River 45.* — Iowa (Iowa). — *River 46.* — Des Moines (Minnesota, Iowa, Missouri). — *River 47.* — Missouri. — *River 48.* — White R. (Missouri, Arkansas). — *River 49.* — Arkansas (Colorado, Kansas, Indian Territory, Arkansas). — *River 50.* — Red River (Texas, Indian Territory, Arkansas, Louisiana). *Now left bank branches:* *River 51.* — Wisconsin (Michigan, Wisconsin). — *River 52.* — Illinois (Illinois). — *River 53.* — Yazoo (Mississippi). — *River 54.* — Sabine R., (forming part of boundary line between Louisiana and Texas). — *River 55.* — St. Lawrence (boundary line for some distance between State of New York and Canada.) — *River 56.* — Ottawa (branch of St. Lawrence in British America.)

(576.) **Comparative Dimensions** (Plate VI. A and B.) — These two maps are drawn on the same scale, that the comparative dimensions of countries, lakes, seas, etc., may be determined at a glance, or, more correctly, with a pair of compasses. The teacher will require no aid to lead the pupil through the proper exercises:—such as, for example, the following:

Massachusetts corresponds in size to the Kgd. of

Wurtemberg—Maryland to Holland—Ireland to Maine—the Atlantic coast of Spain and Portugal would reach from New York City to the southern frontier of N. Carolina, etc.

(577.) **Towns according to States.** — *Maine:* (Fig. 2.) Mattawamkeag—Calais—Eastport—Machias—Ellsworth—Bucksport—Belfast—Rockland—Waldoborough—Wiscasset—Bath—Brunswick—Portland—Saco—Biddeford—Wells—York—Berwick—Alfred—Paris—Andover—Farmington—Moscow—Solon—Dover—Old Town—Bangor—Newport—Norridgewock—Waterville—Augusta—Auburn. — *New Hampshire:* Lancaster—Franconia—Haverhill—Conway—Hanover with Dartmouth College—Plymouth—Ossipee—Gilford—Canterbury—Newport—Charlestown—Great Falls—Concord—Dover—Portsmouth—Exeter—Manchester—Keene—Winchester—Amherst—Nashua. *Vermont:* St. Albans—Derby—Irasburg—Guildhall—Danville—Burlington—Montpelier—Middlebury—Chelsea—Newbury—Norwich—Rutland—Windsor—Manchester—Bellows Falls—Bennington—Newfane—Brattleboro. — *Massachusetts:* Greenfield—Deerfield—Lowell—Lawrence—Haverhill—Newburyport—Andover—Gloucester—Lexington—Lynn—Salem—Nahant—Concord—Boston with Charlestown, Roxbury, Cambridge, Dorchester—Dedham—Abington—Marshfield—Plymouth—Chatham—Barnstable—Nantucket—New Bedford—Fall River—Taunton—Worcester—Springfield—Chicopee—Northampton—Lenox—Pittsfield—Amherst. — *Rhode Island:* Smithfield—Pawtucket (half in Rhode Island and half in Massachusetts)—Providence with North Providence—Warwick—Bristol—Newport—South Kingston. — *Connecticut:* Sharon—Suffield

— Stafford — Tolland — Norwich — Stonington — New London — New Haven — Bridgeport — Fairfield — Norwalk — Stamford — Danbury — Waterbury — Litchfield — Middletown — Hartford. — *New York*: (Fig. 1.) Niagara Falls — Lewiston — Lockport — Albion — Rochester — Oswego — Volney — Pulaski — Sackett's Harbor — Watertown — Ogdensburg — Canton — Potsdam — Malone — Rouse's Point — Plattsburg — Ticonderoga — Whitehall (Fig. 2.) — Caldwell — Queensbury — Sandy Hill — Saratoga — Johnstown — Schenectady — Cohoes — Lansingburg — Troy — Albany — Hudson — Catskill — Saugerties — Kingston — Rondout — Poughkeepsie (Po-keep'-see) — Fishkill — Newburg — West Point — Sing Sing — White Plains — New York — Brooklyn — (Fig. 2.) Huntington — Greenport — Sag Harbor — Riverhead — Islip — (Fig. 1.) Port Jervis — Monticello — Delhi — Binghamton — Owego — Elmira — Bath — Angelica — Olean — Cuba — Ellicottville — Maysville — Dunkirk — Buffalo — Batavia — Lyons — Canandaigua — Geneseo — Geneva — Havana — Ithaca — Auburn — Syracuse — Salina — Cortland — Norwich — Cooperstown — Morrisville — Utica — Rome — Trenton Falls. —

Remark. — The close proximity of populous and growing towns, particularly near New York City, requires the omission of various names, such, for instance, as, Yonkers — Tarrytown — Greenburg — Morrisiana — Flushing — Newtown — Oyster Bay — Hempstead, and others.

New Jersey: (Fig. 1.) Newton — Belvedere — Orange City — Paterson — Jersey City — Newark — Elizabeth — New Brunswick — (Pl. VII.) Princeton — Trenton — Camden — (Fig. 2.) Hoboken. — *Pennsylvania*: Oil City — Titusville — Erie — Athens — (Fig. 2.) Towanda — Milford — Wilkesbarre — (Pl. VII.) Easton — Pottsville — Reading — Norristown — Philadelphia — Lancaster — Harrisburg — York — Chambersburg — Browns-

ville—Pittsburg—Alleghany City.—*Delaware*: Wilmington—New Castle—Delaware City—Dover.—*Maryland*: Cumberland—Hagerstown—Frederick—Baltimore—Annapolis.—*E. Virginia*: Winchester—Harpers Ferry—Alexandria—Fredericksburg—Charlottesville—Richmond—Williamsburg—Yorktown—Fortress Monroe—Norfolk—Portsmouth—Danville—Petersburg—Abingdon—Lynchburg—Lexington—Staunton.—*N. Carolina*: Weldon—Edenton—Tarboro—Raleigh (raw'-lee)—Newbern—Wilmington—Fayetteville—Charlotte—Salisbury.—*S. Carolina*: Spartanburg—Yorkville—Camden—Columbia—Georgetown—Charleston—Beaufort—Barnwell—Hamburg—Abbeville—Anderson.—*Georgia*: Athens—Augusta—Milledgeville—Savannah—Darien—Columbus—Macon—La Grange—Griffin—Atlanta.—*Florida*: Pensacola—Quincy—Tallahassee—St. Marks—Fernandina—Jacksonville—St. Augustine—Key West.—*Alabama*: Florence—Decatur—Huntsville—Talladega—Montgomery—Mobile—Selma—Gainesville—Tuscaloosa.—*Mississippi*: Holly Springs—Aberdeen—Columbus—Jackson—Vicksburg—Natchez.—*Louisiana*: Shreveport—Harrisonburg—Bayou Sara (bi'-oo-sah'-ra)—Baton Rouge—Madisonville—Lafayette—New Orleans—Algiers—Donaldsonville—Opelousas—Alexandria—Natchitoches (natch'-i-totchiz).—*Texas*: Houston—Galveston—Matagorda—Corpus Christi—Brownsville—San Antonio—Austin.—*California*: Humboldt City—Shasta—Nevada—Marysville—Placerville—Sacramento—Stockton—Sonora—Millerton—Los Angeles—Ft. Yuma—San Diego—Santa Barbara—Monterey—San José—San Francisco—Benecia.—*Minnesota*: Minneapolis—St. Paul—Ft. Snelling—Stillwater—Hastings City—Redwing—Wabashaw—Winona—Mankato.—*Michigan*: Sault St. Mary

—Saginaw—Port Huron—Detroit—Ypsilanti
—Ann Arbor—Monroe—Kalamazoo—Jackson
—Lansing—Grand Rapids—Grand Haven.—
Wisconsin: Superior City—Green Bay—Oshkosh
—Fond du Lac—Sheboygan—Milwaukee—
Racine—Kenosha—Beloit—Janesville—Madi-
son—Prairie du Chien—Portage—La Crosse
—Beaver Dam—Watertown—Waukesha—
Prescott.—*Illinois*: Galena—Rockford—Chicago
—Joliet—Aurora—Ottawa City—Galesburg
—Peoria—Bloomington—Quincy—Jackson-
ville—Springfield—Alton—Vandalia—Belle-
ville—Kaskaskia—Cairo.—*Indiana*: South Bend
—Fort Wayne—Lafayette—Indianapolis—
Richmond—Terre Haute—Madison—New Albany
—Evansville.—*Ohio*: Toledo—Sandusky City
—Cleveland—Steubenville—Zanesville—
Marietta—Portsmouth—Chillicothe—Cincinnati
—Hamilton—Dayton—Springfield—Columbus.
—*Nevada*: Gold Hill—Virginia City—Austin—
Jacobsville—Aurora—Carson City—Dayton.
—*Nebraska*: Omaha City—Bellevue—Nebraska
City—Brownville—Fort Kearney.—*Kansas*:
Marysville—Atchison—Leavenworth—Topeka
—Lecompton—Lawrence—Wyandot—Mound
City—Iola—Ft. Atkinson—Fort Riley.—*Iowa*:
Dubuque—Davenport—Iowa City—Muscatine
—Washington—Burlington—Fort Madison—
Keokuk—Oskaloosa—Des Moines—Council
Bluffs.—*Missouri*: St. Joseph—Hannibal City—
St. Charles—St. Louis—St. Genevieve—
Jefferson City—Lexington—Independence—
Kansas City—Platte City.—*Arkansas*: Fayette-
ville—Batesville—Helena—Arkansas—Napo-
leon—Columbia—Camden—Fulton—Fort
Smith—Van Buren—Little Rock—Pine Bluff.
—*Tennessee*: Clarksville—Lebanon—Knoxville
—Chattanooga—Murfreesborough—Columbia
—Memphis—Jackson—Nashville.—*Kentucky*:

Covington—Newport—Maysville—Frankfort—Lexington—Bowling Green—Paduca—Hawesville—Louisville—Danville.—*W. Virginia*: Wheeling—Parkersburg—Clarksburg—Charleston—Wyoming—Guyandotte.—*Washington Territory*: New Dungeness—Port Townsend—Whatcom—Olympia—Nesqually or Nisqually—Steilacoom—Ft. Walla-Walla—Ft. Vancouver—Pacific City.—*Oregon*: Astoria—Portland—Oregon City—Dalles City—Auburn—Jacksonville—Empire City—Eugene City—Salem.—*Idaho*: Lewistown—Florence—Ft. Hall—Holladay—Silver City—Boisee City.—*Montana*: Ft. Benton—Virginia City.—*Dakota*: Ft. Union—Ft. William—Ft. Clark—Ft. Pierre—Yankton.—*Utah*: Ogden City—Ft. Bridger—Gr. Salt Lake City—Lehi—Provo—Springville—Fillmore City.—*Wyoming*: Ft. Connor—Ft. Laramie.—*Colorado*: Central City—Denver City—Golden City—Colorado City.—*Arizona*: Prescott—Tucson—*New Mexico*: Taos—Santa Fé—Albuquerque—Belen—Mesilla—Ft. Filmore.—*Indian Territory*: Thalequa—Ft. Arbuckle—Ft. Washita—Ft. Towson.—*District of Columbia*: Washington—Georgetown—Alexandria.

(578.) **Remarks on United States.** — We abstain from any historical sketch. The American youth must thoroughly study the history of his country, elsewhere. We translate and compress, however, a passage from a German work, "*Meyer's Universum*" more valuable as the unbiassed opinion of a foreigner.

"In the U. States", says this writer, "we find all the natural conditions requisite for the existence of one single political organization, destined to become superior, in extent, power and prosperity, to the empires of Sesostriis, Alexander and Augustus; and not equaled by any existing country. The Creator has spread, over this favored land, fertility — a uni-

form facility of internal communication—a singularly vast and rich river-system (which Humboldt called the life-giving element, big with future consequences, and binding, by one common interest, the entire population together), and a lavish abundance of the two most valuable minerals, coal and iron. These blessings have been bestowed, in the same degree, upon no other region of the globe.

“Nature herself has imposed, upon the U. States, the necessity of *one permanent, political system*. The exterior configuration and the structure of the interior surface, equally indicate that any separation can be but transitory. The South,* inspired by its separate interest, may dissolve its union with the North; the West may break away from the East; but, they will speedily be compelled to reunite, by the want of natural, interior boundaries, and of all aids of disjunction, in a land obviously formed for mutual intercourse. The struggles, and jealous competitions of independent states, would produce collisions; and the strongest Power would soon compel all the weaker, back again into *one system*, as the sun holds the planets in their orbits. One ultimate union must result from the peculiar configuration of the great interior *river-basin*, which, by its remarkable uniformity, necessitates a corresponding uniformity in language, customs and political organization. Hence the rapid transformation, and amalgamation, of the affluent heterogeneous nationalities; often erroneously ascribed to the striking assimilation-power of the anglo-american race. It was the obvious will of God, as, in contrast to the structure of the *eastern* half of the globe, he modeled the outline of the new continent, that it should be the seat of *one great nationality*, of sufficient power to assimilate to itself all tributary elements.

Nature has equally indicated the U. States as the

* This, bear in mind, was written before the abolition of slavery and before the great rebellion.

seat of one *democratic and commercial state*, which, as such, must be inspired with a passion for enlarging its territory. Its position, between the two great oceans of the globe, and the vast number of internal rivers, invite the American to navigation and foreign commerce. Agriculture and trade possess less attraction. The native American is more likely to become a merchant or mariner, than a farmer; and to leave the laborious, and less profitable cultivation of the soil, to the european emigrant. Commerce, however, developes the lust of gold, habitual excitement and the spirit of speculation.

Should the population increase in the past proportion, this country will reach its culminating point in about 400 years. In the mean time, it offers ample room for the immense european emigration. It will then have a population of 500 millions. As the price of labor becomes cheaper, and the resources of the soil and industry, the mines, the waterpower, steam, etc., shall be fully developed, it will supply all the countries of the earth with its produce and manufactures.

If it be true that Europe has, during so many centuries, held the sceptre of the Old World, because of its superiority, to Asia and Africa, in the commercial, and other facilities, offered by its broken, indented coasts, peninsulas, bays and seas, and its interior river-systems—what a role is reserved for the United States, which, in extent of coast, internal lakes, seas, natural and artificial navigable streams, etc., already surpasses Europe *fivefold*; and whose colossal mineral and other resources increase with every year.”

We cannot lay the above remarks before the American youth, without reminding them, that the great world-empires, described by history, fell into corruption and decay, because of their lust for gold, their ambition, pride, luxury, and sensual enjoyments, their ignorance of, or disobedience to, God. The american continent, thus wonderfully constructed, was, doubtless, at a later period, given to man, that

he might build up a great political fabric, upon a *new* system, more in harmony with the lessons of experience and with the light of Revelation. This is our mission as a people. It should be our aim to surpass other nations, not in wealth, luxury, pride, territory and military conquests, but in virtue, temperance, justice, righteousness, humility, faith in God and obedience to his Word. These, and these only, will permanently secure to us the blessings of peace, rational liberty and christian civilization.

MISCELLANEOUS REMARKS ON EARTH'S SURFACE.

(579.) In addition to what has been already said of the mountainous regions of the globe, let us rapidly (Pl. II) cast our eyes over the rest of the earth's surface, and mark the principal plains, table-lands, etc. And first, America (here read section 247).

(580.) **Plains and Valleys of N. America.** — One vast plain extends from Arctic Ocean to G. of Mexico, and from Alleghanies to Rocky Mts., interrupted only by a more elevated region, near the parallel of the five lakes. A large portion is covered with immense, magnificent forest trees, while hundreds of square miles are occupied by monotonous tracts of sand, clothed only with gigantic pines, denominated pine-barrens. That part, N. of parallel intersecting the five lakes, is, in a great degree, characterized by the sterility of the frigid zone; but the rest (an area of one and a half million square miles) is of almost unexampled fertility. Some parts of this plain, in the northern United States, bear the name of *prairies*, — in the southern, *savannas* (144, 145). This plain, in the United States, being bounded on the E. and W. by mountains, forms three principal valleys: the valley of the St. Lawrence, the great valley of the Mississippi and the valley of the Ohio.

(581.) **Plains and Valleys of S. America.** — The eye here easily follows several great valleys, spreading into vast plains: the valley of the Orinoco — the valley of the Amazon — the valley of the La Plata or Parana. The most level part of the earth's surface is said to be a tract in the valley of the Orinoco, greater in extent than France, a large part of it entirely destitute of trees, called *llanos* (146 — 149). The plains of the Amazon valley are called *silvas*, from their mighty and impenetrable forests occupying more than one million square miles, 200,000 of which are annually laid under water by the inundations of the Amazon. Humboldt says, these forests truly merit the name of "primeval". "The intense, tropical heat and the abundant moisture acting upon the wonderfully rich soil has", says Prof. Ansted, "produced an inconceivable exuberance of vegetable and animal life, which actually offers a bar to civilization as great as the sterility of the African desert". Farther S., 25th parallel, from the valley of the La Plata to Str. of Magellan, extend treeless plains, about 2000 miles in length and averaging 300 miles in breadth, called *pampas*.

(582.) **Plains and Valleys of Europe and Asia** — are distinguished without difficulty. Observe the level parts of England, Scotland and Ireland, Wales and North Scotland being mountainous. See what a stupendous plain, the largest in the world, crosses N. Europe, interrupted only by Ural Mts., and extends nearly to Behring Str. Leaning toward the N., it rolls its mighty rivers into the German and Baltic Seas and the Arctic Ocean. In different parts, it bears the local names — *Sarmatian Plain*, traversed by Oder, Vistula, Niemen and Dwina — *Siberian Plain*, that vast level of N. Asia, some frozen parts of which (Pl. II.) are called *tundras*. — *Kirghiz Steppes*, in the neighborhood of Caspian Sea and Sea of Aral. Trace the valleys of the Danube (traversing the Hungarian

plain, 300 miles long, and from 300 to 400 feet above the sea-level)—the Po (winding through the beautiful plain of Lombardy)—the Rhone—the Rhine—the Amoor—then the Ganges and Indus (flowing through the plain of Hindostan)—the Tigris and Euphrates, uniting into one stream. In south-eastern and Asiatic Russia, and in the flats of Tartary, these tracts are termed *steppes* (from a Russian word, signifying *barren*). A *wilderness* (in India called a *jungle*) differs from a desert, as being often covered with luxuriant vegetation. The term is applied also to wild, barren spots among rocky mountains, as, for ex. in Arabia. These plains, in various countries, have different characteristics. Here, they form a vast extent of frozen ground or snow—there, barren, burning sands—here, luxuriant gardens of tropical vegetation—there, gloomy desolate wastes; now, a monotonous level, varied by moderately sized hills, without order or system—again, for many miles, the soil rises into long waves or undulations perfectly uniform in structure.

(583.) **Plains and Valleys of Africa.** — The most remarkable plain of the globe is perhaps the desert of Sahara—about 2500 miles long by 1200 miles broad—extending from the valley of the Nile to the Atlantic and even projecting its submarine sand-banks, far beyond the coast, into the ocean (Pl. III). The eastern and more favored portion, known as the Lybian Desert, is generally formed, not of sand, but of hard, horizontally-bedded sandstone rock, perfectly smooth and level. The western portion is one white, solitary, desolate, awful sea of burning sand. “No animal—not even an insect—breaks the dread silence; nor is a tree or a shrub to be distinguished during days of incessant travel. In the glare of noon, the air quivers with the heat reflected from the red sand, and the night is chilly, under the clear sky sparkling with its host of stars” (Ansted). Oases, however, (151) are found

at intervals. Among the frightful features of this desert are the *simoon*, a hot, dry wind which, sometimes, for 12 hours, so fills the air with sand, as almost to obscure the sun—and the absence of rain, except during short intervals, sometimes 20 years apart. Hot springs are found, surrounded by a luxuriant vegetation—salt mines, etc. Caravans cross it in various directions, in danger of death and great suffering, from thirst, and from exposure to the *simoon*.

(584.) **Desert of Kalahari** — in the southern extremity of Africa, between Orange R. and L. Ngami (Pl. II.), sometimes called the *South African Sahara*, although, by no means, an uninhabitable, sterile waste. It is occupied by the Bushmen and the black Kalahari, and inhabited by immense numbers of wild beasts: ostriches, antelopes, buffaloes, elephants, giraffes, lions, leopards, panthers, hyenas, etc. A part lies within the tropics. The surface is sometimes a waterless, sandy waste, sometimes a vast sea of grass which, on the E., is succeeded by thick impenetrable forests. The town, Lattako, lies in the neighborhood.

(585.) **Table-lands, etc., of N. America.** — Thousands of feet above these lower plains, spread the higher table-lands or plateaux, found not only on continents, but on islands. In N. America, the great plain of Mississippi R. rises on the N. to the heights before mentioned, about the parallel of the five lakes, and on the W., to a wide and lofty plateau, 7000 to 9000 feet high which occupies a great part of Mexico and extends also to California, where its elevation is about 6000 feet above the sea.

(586.) **Table-lands of S. America.** — Besides the elevated tracts of the Guiana and Brazilian Mts., the summit of the Andes presents table-lands of more limited extent, but far greater height. That of Desaguadero (Bolivia and Peru)—500 miles long, 50 miles

broad, including L. Titicaca and city of Potosi — lies higher than 13,000 feet. The table-land of Quito is 10,000 feet high — 200 miles long — 30 miles broad.

(587.) **Table-lands of Europe and Asia.** — In Europe, the central plateau of Spain rises 3000 feet. From the Adriatic and the Balkan Mts., an elevated plateau extends across Asia to Pacific, bearing, upon its gigantic pedestal, the loftiest mountains of the globe. It includes the table-land of Persia — the plains of Armenia — the plateau of Tibet — the desert of Gobi, etc. The latter has not been thoroughly explored. Its mean height is given at 4000 feet.

(588.) **Table-lands of Africa.** — Southern Africa appears to rise to a considerable elevation, in successive terraces, from the coasts to the interior, and even a considerable portion of the desert is an elevated table-land, bearing mountains estimated, by Dr. Barth, at from 3000 to 5000 feet high.

(589.) **Gulf Stream.** — Many other interesting subjects invite attention: — winds — the ocean — tides — reefs — keys — whirlpools — eddies — extensive tracts of marine weed (154—164) — immense currents resembling broad, rapid rivers sweeping through the surrounding ocean. Our limited space excludes these from this little volume. We have only room to allude to one remarkable current — the *Gulf Stream* — a vast body of water, traceable back as far as the Indian Ocean, and even the Pacific, proceeding, N. W. across the Atlantic, into G. of Mexico, and, assisted by the river-current of the Mississippi, passing out again into the Atlantic, between Florida and Cuba, where it is known as the *Gulf Stream*. It extends upwards of 3000 miles, and occupies 78 days in its progress, with a velocity relaxing from 120 miles per day, at the mouth of G. of Mexico, to 10, in the vicinity of the Azores, where it is lost in the Atlantic. The warm air and vapor, borne from the tropical

regions, by this vast mass of heated water, exercise a remarkable influence upon the climate of western Europe, occasion the verdure of Gr. Britain and Ireland, and soften the temperature even as far north as Spitzbergen; while the shores of the American continent, in the same latitude as the British Islands, are scarcely inhabitable on account of the cold. Sir John Herschel thinks the excavation of the G. of Mexico and Caribbean Sea, an effect of the action of the gulf stream which will, sooner or later, cut through the Isthmus of Darien, leaving only a chain of islands.

To whatever cause may be ascribed the forms of continents, it is admitted that they have been submerged, and the ocean bed laid dry, more than once.

(590.) **Depth of the ocean.** — Attempts to measure the greatest depth of the ocean, have been unsuccessful (Pl. IV). In 1843, Ross measured the Atlantic off coast of Brazil, with a line 27,600 feet, and found no bottom. In 1852, Denham found no bottom with a line 46,236 feet, and, in the same year, Parker (American frigate "Congress") with a line 49,800 feet. Such soundings, however, are not reliable, there being no certainty that the line sinks directly toward the bottom. The general opinion is that the depressions of the land, beneath the ocean, do not far exceed 27 or 28,000 feet. The greatest depth of the N. Atlantic is supposed to be at a point south of, and near, the great shoal of Newfoundland.

(591.) **Primeval Forests.** — We conclude this chapter by a rapid sketch of tropical nature, compressed from Humboldt, Daniel, etc. The term "primeval forest" is often used vaguely. It belongs particularly to the great Brazilian forest which is so impenetrable that it is scarcely possible, even with the axe, to clear a passage between the enormous tree-trunks, eight to twelve feet in diameter. This forest includes a large

part of the interior of S. America. Its area, many times greater than that of Germany, exhibits a wonderful luxuriance, resulting from the combined influence of extreme moisture and high temperature. It is vain to ask, says Humboldt, of *what trees* it consists, as a countless number of families are crowded together and new forms are always presented.

(592.) **Nature on Equator — a South American River — Day.** — During the noontide hours, the mighty river rolls on, sparkling and flashing. Nature lies silent under the equatorial heat. The sun is directly in the zenith. Not a breath of air. The naked rocks and bowlders* are covered with immense numbers of iguanas, lizards and spotted salamanders, which, motionless, with uplifted head and open mouth, delight to inhale the burning air. Serpents, whose colors eclipse the most brilliant flowers, come forth, from hollow tree-trunks, or hiding places in the ground, sun themselves on the rocks, or, winding up the trunks and branches of trees, watch for insects or birds. The crocodile lies in numbers on the shore, waiting for the capibara (ca-pib'a-ra), an animal between the hog and the rabbit, 3 or 4 feet long, which is devoured, in the forest, by the tiger, in the river, by the crocodile. The animals all fear, watch, hate and avoid each other. Most of the living creatures seek rest and shade. The larger beasts sleep or skulk in the black depths of the forest. Butterflies, of strangely gorgeous hues, flutter from flower to flower, or drink at the cool streamlet. The huge owl, sits motionless upon his shaded branch, impatient for the night. Myriads of chafers flash, like glittering jewels, through the air. Upon invisible wings, the humming bird

* Bowlder: — a stone or rock, found on the sea shore, and in, or near rivers, worn smooth or rounded by the action of the water. Any rock apparently transported from a distant place by water, glaciers etc. Such masses, of enormous size, are sometimes found upon the highest mountains.

hangs in the sunshine, clothed in the glory of the rainbow. Nature would lie as in the stillness of death, but for the fluttering and humming of millions of insects in the lower strata of the atmosphere, interrupted, occasionally, by the blowing of the freshwater dolphin, the distant scream of a monkey, or the deep tones of the toad and frog, blending with the monotonous chant of the cicada and locusts. At length the burning orb descends toward the west. The noonday heat begins to subside. The beast-world awakens and comes forth with extraordinary activity. Monkeys, by hundreds, issue from the forests, sporting, leaping, fighting, screaming. Birds of wonderful form and magnificent plumage, appear on all sides, now sweeping onward in solitary flight, now swarming in numbers along the odor-breathing shores. Flocks of flamingoes, and other waterbirds, occasionally darken the air like a cloud. The whole parrot-tribe, conspicuous from their striking tints of deep blue, green or red, pierce the ear with discordant screeches. The toucan taps the tree-branch with his hollow bill and utters his plaintive cry for rain.

(593.) **Night.** — The sun goes down. The countless creatures of the day seek rest. The night animals, among them the bloodthirsty vampire-bat, awake; the beasts of prey come forth, raging with hunger. Millions of flashing fire-flies illuminate the darkness. The wild nocturnal sounds render sleep impossible. Various utterances of the ape-tribe are heard; sometimes, soft, plaintive, almost flute-like; again, breaking into shrill, passionate discords. The black jaguar (jag'-u-ar) (American tiger — largest and most blood-thirsty variety) is the terror of the whole monkey-tribe. His screams often proceed from the high tree-branches, mingled with the sharp screeches and wailings of the monkeys seeking to escape. The cougar adds his roar. Now, these noises are heard singly; now, they break forth spontaneously in one

universal chorus, filling the vast forests with shrieks of rage, pain and despair. They appear to originate in some accidental combat. The jaguar, for instance, pursues the peccary (pec'ca-ry). The latter, flying in terror, breaks, with crashing noise, through the interwoven branches which impede his flight. The apes, on the tree-tops, terrified by the sound, join their cries. This arouses the larger animals and alarms innumerable birds, till the whole solemn forest-world is thrown into disturbance. Such general commotions occur more frequently on stormy nights, amid violent torrents of rain, when flashes of lightening illuminate the scene, and peals of thunder enhance the tumult and disorder of the earth.

POPULATION TABLE.

(594.) It is not possible to say with certainty how many human beings are, at this time, living on the globe. All the usual estimates are conjectural and probably vary from the truth by many millions. The general impression is that the total number amounts to 1350 millions. The following table, principally on the authority of the "Geographisches Jahrbuch" of Justus Perthes, Gotha, 1866, is perhaps the latest and most reliable account of the population of different continents, countries, etc.

AMERICA	74,500,000
EUROPE	285,000,000
ASIA	798,600,000
AFRICA (about 50 to 60 million negroes) . . .	188,000,000
AUSTRALIA	1,116,970

N. AMERICA.

Danish America (total)	114,622
Greenland	9,404
Iceland	66,987
Danish West Indies (Santa Cruz)	38,231
British America (total)	4,404,396
Possessions N. of United States (total) . . .	3,444,914
(besides 155,000 independent Indians.)	
Upper Canada	1,396,091
Lower Canada	1,111,566
New Brunswick	252,047
Nova Scotia (with Cape Breton)	332,264
Prince Edward I.	80,857
Newfoundland	122,638

British Columbia	50,000
Vancouver I.	23,000
Red River Settlement	65,000
British West Indies (total)	933,847
Bahama Is. (5,500 white)	35,287
Jamaica (13,800 white)	441,264
Virgin Is.	6,051
Dominica	25,065
Barbadoes (16,500 white)	152,727
Trinidad (5,340 white)	84,438
British Honduras or Balize	25,635
Bermuda, (or Somers) Is.	11,451
French America (total)	277,954
French Fishery Is. (St. Pierre, Miquelon)	2,497
French West Indies	275,457
Guadeloupe	118,867
Martinique	136,956
United States of America, including Russian America	31,980,694
Mexico	8,259,000
Republics of Central America (total)	2,650,471
Guatemala	1,180,000
San Salvador	600,000
Honduras	350,000
Nicaragua	400,000
Costa Rica	120,471
West Indies (total)	3,935,352
Spanish West Indies	1,982,817
Cuba (of whom 793,484 white)	1,396,530
Porto Rico (300,406 white)	583,308
Swedish West Indies (St. Bartholomew)	2,800
Dutch West Indies (Curaçoa, etc.)	31,931
I. of Hayti (total)	708,500
Rep. of Hayti	572,000
Rep. of San Domingo	136,500

S. AMERICA.

Columbia (of whom 126,000 independent Indians)	2,900,000
Venezuela	2,200,000
Guiana (total)	246,795
French (about $\frac{1}{11}$ white)	27,137
Dutch (of whom 7500 maroons*)	57,632
British (143,538 negroes)	162,026
Brazil (1,715,000 slaves)	10,045,000
Paraguay	1,337,439

* Maroon — a name given to free blacks living on the mountains in the West Indies.

Uruguay	240,965
Argentine Confederation (besides 40,000 independent Indians)	1,377,000
Patagonia	30,000
Chili (independent Indians 10,000).	1,676,243
Bolivia (245,000 Indians)	1,987,352
Peru	2,500,000
Ecuador (200,000 Indians)	1,300,000

EUROPE.

Great Britain and Ireland (total)	29,935,404
England and Wales	21,210,020
Scotland	3,153,413
Ireland	5,571,971
Possessions in Europe (Heligoland, Gibraltar, Malta)	165,317
Total population of entire British Empire	174,156,673
Sweden and Norway (total)	5,560,108
Sweden	4,070,061
Norway	1,490,047
Russia in Europe (total)	67,619,425
Russia Proper	61,061,801
Poland	4,840,466
Finland	1,717,158
Total population of the Russian Empire	76,083,818
Germany	38,016,968
North German League (total)	29,220,922
Prussia Proper (with Lauenburg) before 1866	19,304,843
Added in 1866:	
Hanover	1,923,492
Hesse-Cassel	737,283
Nassau	466,014
Frankfort City (and territory)	89,837
Territory ceded by Bavaria	32,976
Territory ceded by Hesse-Darmstadt	75,102
Schleswig-Holstein	960,996
Total population of Prussia	23,590,543
Saxony	2,343,994
Mecklenburg-Schwerin	552,612
Mecklenburg-Strelitz	99,060
Oldenburg	301,812
Saxe-Weimar	280,201
Brunswick	292,708
Anhalt	193,046
Saxe-Meiningen	178,065
Saxe-Coburg-Gotha	164,527

Saxe-Altenburg	141,839
Lippe-Detmold	111,336
Waldeck	59,143
Schwarzburg-Rudolstadt	73,752
Schwarzburg-Sondershausen	66,189
Reuss	130,396
Schaumburg-Lippe	31,382
Hesse-Darmstadt, N. of R. Main	225,696
Hamburg	229,941
Lubeck	50,614
Bremen	104,066
Bavaria	4,774,464
Wurtemberg	1,748,328
Hesse-Darmstadt, S. of R. Main	816,902
Baden	1,433,551
Lichtenstein	7,994
Germanic Confederation before the war of 1866	46,057,916
Belgium	4,940,570
Holland (total)	3,735,682
Holland Proper	3,529,108
Luxemburg	206,574
Denmark	1,617,170
Portugal (total)	4,351,509
Continent	3,987,861
Azores	251,884
Madeiras	111,764
Spain (total)	16,302,625
Continent	15,752,607
Balearic Isles	278,660
Canary Is.	256,408
Spanish population of Tetuan (Morocco)	14,950
Rep. Andorra	12,000
France	37,472,732
Switzerland	2,510,494
Italy	24,263,320
Papal Territory	692,112
Monaco*	1,887
Rep. San Marino	7,080
Austria	32,572,932
Turkey in Europe	15,725,367
Turkey Proper	10,586,000

* Monaco (498). — We have placed *Monaco* among French towns. By a treaty, 2 February, 1861, the ruler of that little principality sold a considerable part, for four million francs, to France. (Pl. V. B. Fig. 2). The treaty reduced the population, from 7,627 to 1,887. It has, however, a Council of State and several accredited foreign Consuls.

Roumania	3,864,848
Wallachia	2,400,921
Moldavia	1,463,927
Servia	1,078,281
Montenegro	196,238
Greece (with Ionian Is. 225,861)	1,329,236

ASIA.

Turkey in Asia (Asia Minor, Armenia, Syria, and part of Arabia)	16,050,000
Arabia (without Turkish possessions)	4,000,000
(1,219,000 Wahabees, 76,500 Bedouins.)	
Persia	5,000,000
Beloochistan	2,000,000
Hindustan, or British India	135,694,323
French colonies in India (Pondicherry)	229,533
Portuguese colonies in India (Goa)	527,067
Indo-Chinese States (total)	21,109,000
Birman Empire	4,000,000
Empire of Siam	5,000,000
Empire of Anam (Cochinchina)	11,000,000
French Cochinchina	900,000
Independent States of Malay Peninsula	200,000
Wild wandering tribes of the Peninsula	9,000
Chinese Empire (total)	477,500,000
China Proper	450,000,000
Mongolia	3,000,000
Manchooria	3,000,000
Corea	9,000,000
Tibet	11,000,000
Japan	35,000,000
Russia in Asia (total)	9,327,966
Caucasus	5,057,028
Siberia	4,270,938
Afghan States with Herat	4,000,000

AFRICA.

Morocco	2,750,000
Algeria	2,999,124
Tunis	600,000
Tripolis with Fezzan and Barca	750,000
Egyptian States	7,465,000
Egypt Proper	4,306,691
Nubia	1,000,000
Kordofan	400,000
Abyssinia	3,000,000
Galla Country, S. of Abyssinia to the equator	7,000,000

Somauli Peninsula	8,000,000
Portuguese Possessions on E. coast of Africa (Mozambique, Sofala etc.)	300,000
Cape Colony	267,096
British Kaffraria	81,353
Kaffraria (between British Kaffraria and Natal) . .	100,000
Land of the Kaffres, N. of Natal and Transvaal Rep.	440,000
Orange River Rep.	50,000
Transvaal Rep.	120,000
Land of Bechuanas, N. of Transvaal Rep.	300,000
Land of Damara and Namaqua	60,000
Portuguese Possessions on W. coast (Angola, Benguela, etc.	9,057,500
Empire of Moropue (Moluwa)	1,000,000
Empire of Cazembe	530,000
Dahomey	150,000
Ashantee with tributary provinces and Gold Coast	4,500,000
Liberia	250,000
French Senegambia (Senegal)	170,101
Portuguese Possessions in Senegambia	1,095
Dutch colonies on Guinea Coast	120,000
Sierra Leone (English Possession)	41,806
Empire of the Fellata or Foolah Country	22,300,000
Sahara	4,000,000
Unexplored negro countries on both sides of equator according to reports	42,000,000

OCEANIA.

MALAYSIA

Sumatra with south-western islands	2,600,000
Java	13,649,680
Borneo with the neighboring smaller islands	1,200,000
Celebes	473,040
Molucca or Spice Is.	376,029
Philippines (with Sooloo Archipelago)	6,000,000

AUSTRALAYSIA

Australia	1,116,970
Tasmania	89,977
New Guinea	1,000,000
New Zealand	154,296
New Caledonia	26,680

POLYNESIA

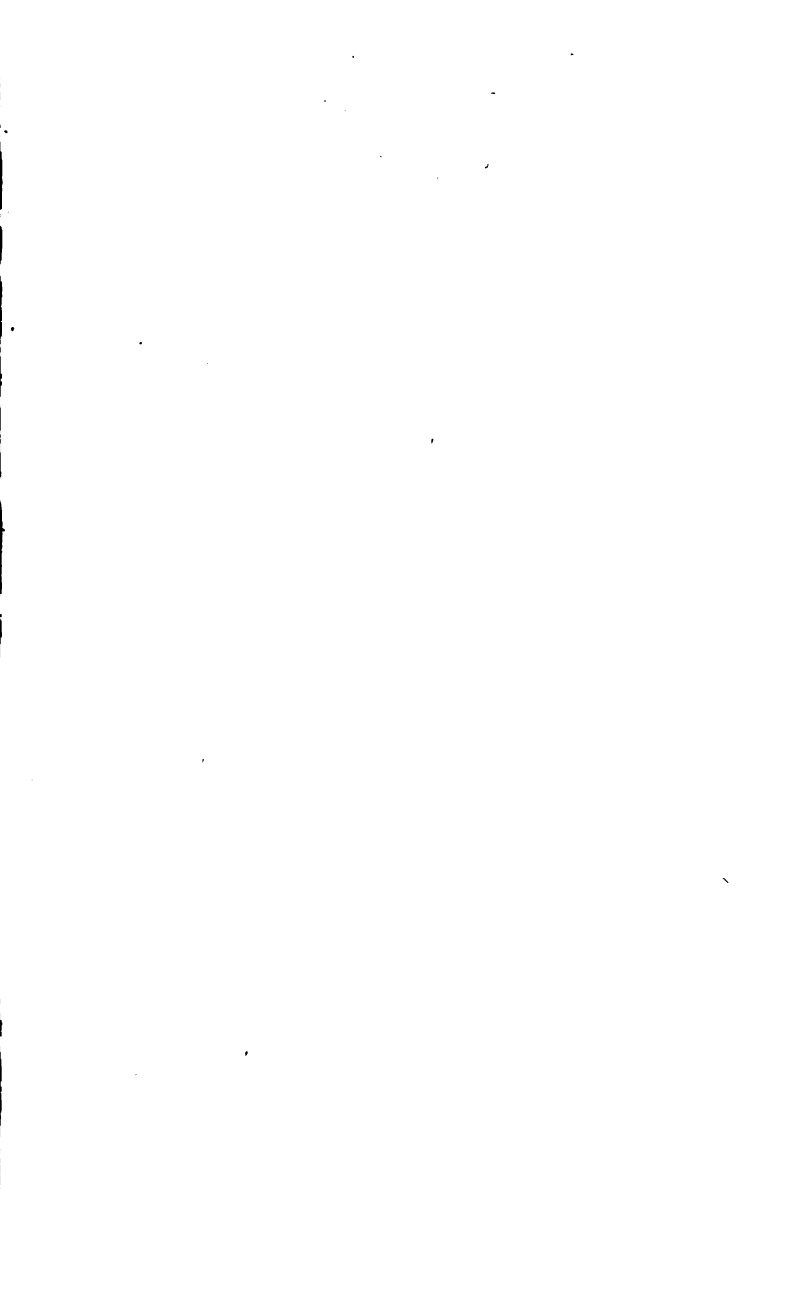
Ladrone or Marianne Is.	5,610
Marshall Archipelago	10,460
Sandwich or Hawaiian Is.	69,800
Feejee Is.	200,000
Friendly Is.	25,000

Society Is.	7,500
Tahiti	9,086
Marquesas	10,000
ISLANDS IN INDIAN OCEAN	
Andaman Is.	10,000
Nicobar Is.	5,000
Ceylon	1,919,487
Maldivé Is.	150,000
Laccadive Is.	6,800
I. of Socotra	3,000
Mauritius (with Seychelles 7,486)	322,517
Rodriguez, Amirante Is.	1,569
Réunion	205,972
Comoro Is.	49,000
Madagascar	3,000,000
Zanzibar	250,000
ISLANDS IN ATLANTIC OCEAN	
Tristan da Cunha	35
St. Helena	6,860
Fernando Po and Annabon	5,590
St. Thomas	8,000
Cape Verde Is.	89,310

ERRATUM.

Section 526 — instead of the following words: "*but the haciendas — that is, the laborers on the great plantations*", read: *but the laborers on the great plantations, (that is the haciendas).*

5245









JAN 19 1928

